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FARMING

FOR THE

MILLION

BY

GEORGE GLENNY, F.H.S.

AUTHOR OF

THE GARDENER'S [illegible] BOOK, MANUAL OF [illegible]
[illegible]
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GARDENING FOR THE MILLION,
ETC., ETC.

New Edition, Revised

LONDON
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FARMING FOR THE MILLION.

"FARMING is Farming," as a grave counsellor told us when he first saw our title; " and what is right for one is right for all" added our sapient friend. He farmed a hundred acres, and could not be made to understand that the plans of farmers varied according to the circumstances under which they were placed; nor that anything but corn growing once in four years, feeding lean sheep till they were fat, and sundry other operations carried out upon a hundred acres, exactly as his great-grandfather had done before him, could be called Farming. Our notions were very different; we knew, as well as our monitor, that the tilling of land, the feeding of stock, the keeping of pigs, poultry, pigeons, horses, and cows, the making of cheese and butter, would constitute a true farmer; but while the few practised all these branches, the million only compassed a portion: one lot, perhaps, went no further than keeping poultry; another, a pig; a third portion, only kept a cow, and so on; every one of these subjects being a branch in farming, and almost everybody, with a few rods of land, practising one or more; so that, while he who took up farming in all its bearings could only act upon a system which embodied all, and rendered one conducive to the profitable management of another, the million required that each subject should be independent of all the others; that is to say, that poultry-keeping should be, not only separately treated, but that fowls, ducks, geese, turkeys, and pigeons, should be separately handled. That the keeping of a cow, and the most profitable use of her produce should be explained; that the feeding of a pig, the management of a horse, and the general business of a stable; in fact, that each subject should be as perfect and as distinct from all other matters as possible.

If we have succeeded in our attempt, we shall have rendered this little volume useful to each individual servant on the largest farm, while every cottager will be enabled, in the most economical way, to practise any one branch on the smallest scale, or to manage any quantity on a first-rate farm. In offering the following pages, we do not propose to enlighten the professional farmer, although he may learn from them some lessons of economy; we do not presume to teach the scientific few, although even those may discover hints that may be useful; all we attempt is, to assist the many who, with scanty means, endeavour to improve their circumstances by keeping one or more of these stocks, or by cultivating one or more of the crops, to obtain a produce, which forms the business of the farmer; and there is one gratifying fact, which is encouraging to the man of the most limited means, however humble his stock in numbers, or his crops in quantity, he may challenge the best farmer in his county as to quality. The cottage-farmers' fatted pig, his butter, eggs, milk, or his quarter of an acre of turnips, whichever he may be striving to produce, may equal those of the best farmer, or the most wealthy gentleman in his neighbourhood, just as the vegetables of the cottager, in most cases, beat those of all the gentlemen at the Horticultural shows; and we desire to enable the humble cultivator of the soil to rival his richer neighbour as cheaply as possible.

There is no difficulty in producing good crops and fine stock, where money is no object; our business is, to show how a man may excel in any one subject without throwing away money that can never be returned to him by the sale of his productions. We have seen pigs fed and fatted at a cost of one shilling per pound, and sold at half the money; and have heard a careless stupid man cry out, that "pig-keeping was unprofitable." We have known people to keep fowls, and declare that every egg cost three halfpence, all of which may be very true, but it betrays ignorance and extravagance in the management. Economy is of the highest importance.

We are not about to show how cheaply a cottage can be built, or to give a fine description of a model farm: we take the world as it is. The millions of cottagers who may desire information have to make the best of the habitations they possess, and can neither choose their locality nor their soil; it would be a perfect absurdity to tell them what their cottage should be, or the situation it should occupy. It would be mockery to tell a man who is obliged to live in a swamp, that he ought to be on a hill. We write for the million, who are limited in their means, and want to improve them; who know a little, and wish to know more; who are ambitious to better their condition, and wish to know how. Our first injunction will be, to rigidly practise economy; for, in ignorance of what they do; an immense waste is committed, not only by the people, but by the government; and frightful as the fact may appear, that which has been suffered to pollute our rivers, would, if saved and sold for the land, have produced enough to have wiped out the whole of the national debt.

ECONOMY.

THE WASTE OF HOUSES AND GARDENS.

"Waste not, want not."

Every description of perishable matter is valuable as manure:—slops and sewage, soap-suds and pot liquor, vegetable remains, dead animals, bones, offal, whatever will rot is of use. The first duty, therefore, of the economists, is to provide a receptacle for every description of waste liquids and solids, and this should be rendered water-tight, for if the liquids will soak away, they are so much value lost.

In the remote parts of the country, where cement is not to be had, and bricks and stone are dear, the only substitute is clay, and puddling in the same manner as is adopted for artificial or ornamental ponds to keep the water in. This puddling is performed by kneading the clay with water until the air is completely expelled, and the whole bottom and sides are lined with this six inches thick at the least. The form and size must be determined by the largest quantity likely to be there at any time; the situation must be determined by the convenience to be provided; the purposes for which the contents are to be used is the dressing of the ground; the object is to keep it as far as possible from the house; yet it ought to be contrived that the night-soil should drain at once into it, and that water can be pumped into it when necessary. To this place should everything waste be taken; from this place should a valuable fertilising liquid be withdrawn. For choice, the cess-pool, for such it must be called, should be lined with bricks and cement, because it may then be covered. But it may be that this cannot be afforded—it may be that even puddling of the sides and bottom cannot be accomplished. In this case we must not attempt to save it as a liquid, but to find material that shall soak it up, and the best of all these is charcoal, peat, moss, and wood-ashes. Under these circumstances, dry and char, or half burn, all the vegetable rubbish you can get, and as much waste wood as can be had, throw a good quantity of this to the bottom of a hole dug on purpose, upon this throw all the slops, and soil, and waste; it will rapidly be soaked up, and the charcoal will remove all the disagreeable smell. When the wet will no longer soak into it, throw some more charcoal in, because the moisture would otherwise filter away and be lost; but so long as the wet is absorbed, it loses nothing. Where there is peat in the neighbourhood, it can be charred and applied as often as the wet predominates. If the hole is filled before you are ready to use it on the land, dig another; but the manure thus formed is only second to the liquid manure, because it has to dissolve in the soil before the plants can take it up, whereas the liquid manure is taken up instantly.

Where you cannot conveniently dig a hole, but must form a dung-heap, make your charcoal, form a heap first, with a hollow in the centre, into which let all the waste be thrown; and instead of allowing the night-soil to go down into a cess-pool in the ordinary way, contrive that vessels, say tubs, shall be placed, so that full ones can be removed for emptying on the dung-heap, and empty ones placed there instead, because in the cess-pool there is a constant waste. If these tubs have a layer of charcoal at the bottom, and other charcoal be thrown in now and then, there will be no offensive smell. The great object is, to preserve everything for the ground that would otherwise be a nuisance, and to prevent that which we do preserve from being offensive.

To show how effectually this can be done with charcoal alone, we may mention that at the Stanley Bridge Works, Fulham, near London, they filter one hundred tons of the most filthy sewage of the London sewers through one ton of charcoal, and the water comes away pure, while the whole of the offensive matter is retained by the charcoal, which, after drying, weighs about two tons, but is perfectly inoffensive, and may be handled like so much gunpowder, without even soiling the hands. It follows, then, that the only ingredient required is the charcoal, which is neither more nor less than burned, or rather half-burned, vegetable matter, such as wood, peat, cabbage-stumps, weeds, and dried leaves, which, instead of being fanned into a flame to consume, should be, when well lighted, covered with turfs or earth, that it may smoulder into a black brittle ash. The inexperienced charcoal-burner may recollect, that after a wood fire there is little left but a white ash, and but a small quantity of that; but here and there will be found bits that have been red hot, and extinguished before quite reduced to ashes. These bits are true charcoal; and if the air is not suffered to get to the fire, the greater portion of the wood will be the same. This bruised to coarse powder is the material which will alone, deodorise, or sweeten, everything, and when mixed with it, fertilise the ground better than any other kind of dressing. From this, it will be understood, that the most offensive waste of any description will be converted to the most valuable manure, and totally divested of all unpleasant effluvium. If charcoal cannot be had or made, a receptacle must be made away from the house, and the waste all deposited and covered with common earth, but not nearly so much fertilising matter will be saved. It is better, in such case, to sink an old tub, where the liquids may be deposited, to be used as occasion may require, while the solid must dry and rot, until it can be spread over and dug into the ground.

This first lesson of economy is of the highest importance, because it disposes of the cleanings of cattle-sheds, stables, pig-sties, poultry-houses, cess-pools, not an atom or drop of which should be allowed to escape; and although the more wealthy farmer, with ample means, will be better able to do this to advantage, it may be done by all to a considerable extent. The best means is by brick or stone and cement cess-pools, where it may be kept and used in a liquid state, a pump being desirable to pump it up as wanted; the next best is a hole, with puddled sides and bottom, as a substitute for bricks and cement; next to this, the deodorising it with charcoal, as described; last of all, the covering it with earth; but at all cost of trouble and smell, and all the disagreeables attending it, saved it must all be, for it is too valuable to be lost.

THE RIGHT OF CUTTING FUEL AND DIGGING TURFS, PEAT, ETC.

To the poor, and even those of the middle class, the right of cutting furze, and digging turfs and peat, to dry for fuel, is very important; a good stack of each is a treasure in the winter time. In some places this is unlimited, on the payment of a trifle per hundred, or per load; in others, there are various conditions, but it is, almost without an exception, advantageous to the man who will work himself. At the proper season, therefore, care must be taken to lose no opportunity of securing these advantages; the turf should be cut into pieces, of a proper size to put on the fire, and then be stacked so that air can get between them to dry them thoroughly, and covered with anything calculated to keep out the wet: a coarse thatching of any kind will answer the purpose. Bearing in mind, that there is no kind of waste vegetation that is not valuable, permission should be obtained, if necessary, to collect leaves, road-scrapings, the clearings of ditches and water-courses, clippings of hedges, and whatever other waste may be attainable. In swamps, where coarse water weeds, rushes, etc., abound, there is generally an opportunity of cutting and removing them, and every barrow full is so much manure, whether they be dried and burned, or charred, or allowed to rot. All these things, neglected as they are in some parts of the country, are nevertheless valuable, and add greatly to the means of improving land; but, perhaps, there is nothing more universally wasted than the leaves that fall in autumn. Many owners of woods, copses, and preserves, have closed them against the peasantry, only because, the good nature which would have allowed an industrious man to gather the leaves, has been abused by ill-disposed men, who destroyed the game. A man whose home and bit of land were evidence of his industry, and whose character was unblemished, would have little difficulty in procuring a relaxation of the prohibition in his own behalf. Many a nobleman and gentleman has been forced to exclude everybody from his estate to protect himself from plunder; and charitable men have been compelled to refuse the poor what is of no use to themselves, because, when leave has been *given* to collect waste, leave has been *taken* to poach, to cut wood, to destroy young trees, and do considerable damage to the place. The public have lost many valuable privileges by abusing them.

The Right of Pasture on Common Land, Forests, etc.

A considerable portion of the English cottagers have the right of a turn-out on a common, and perhaps scarcely any other privilege. It is essential to such persons, that they make the most profitable use of this right. Some may choose to keep geese, others pigs, others may keep a cow. Most who live on the spot will have domestic fowls; and, if there be water, ducks also. All these things being treated of under their respective heads; we have little to say here, beyond enjoining the necessary precaution, so to domesticate the animals before turning out, as to insure their return home, and to mark such as are to shift for themselves for a time, and require to be fetched in. One essential, applicable to all kinds of poultry, is clean and comfortable housing, a slight meal of favorite food before roosting or resting, and plenty of clean water. It is, of course, a great temptation to keep and breed anything that will more than half feed itself,—a pig, a cow, ducks, geese, turkeys, and ordinary fowls, which can run over a good common and get at water, will, a great part of the year, cost but very little; and a small portion of land will grow all they can want beside. All the winter, when home fed, their dung is valuable, but care must be taken to secure enough food when the public run is fed too close, which in some cases will happen, though not often. In particular seasons, too, water may be low, and perhaps not only difficult to reach, but bad when obtained; provision must be made for all this. We have seen the grass burned up, and the ponds dry. The situation of the poor beasts, which are not well provided for at home, is then deplorable. All this only shows the necessity of attention, for, independent of the "cruelty to animals" involved in neglect, a cow will give less milk, and all other living things make less flesh, in fact, lose flesh, so that, apart from inhumanity, there is a certain loss. Water should be always at hand, that they may help themselves; in the absence of this, there will be disease, and perhaps death, and whatever is fatal, to the poor man's cow, cripples the owner for a long time.

MAKE THE BEST OF YOUR LAND, SUCH AS IT IS.

As the cottager and small farmer belong not to a class who can always choose for themselves, it is folly to give directions how to select, or to waste words upon the plan of their house, the aspect of their garden, or the nature of the soil they should prefer. These are matters already decided for those who have houses over their heads. The little land they have may be clay, chalk, peat, sand, or, except so far as they have been able to change it, a barren waste. If a man has to build a pig-stye, or make a drain, to construct a shed or a barn, we might assist him; but as we cannot tell him how to remove his house from one side of his garden to the other, or turn it round to face another way, we will leave him to find out the disadvantages, if there be any, and not point them out to him by saying what it should be. First, then, as to the soil of the garden, or farm, be it little or much, there are some operations good for all—light or heavy, high or low, wet or dry. The first operation should be

DRAINING.

This is so essential, that troublesome as it may be, laborious as it is, and, under particular circumstances, tedious and expensive, yet it so soon pays for itself, by increased crops, that it should be undertaken at any inconvenience. The landlord ought to do it properly, and charge an additional rent of three or four per cent., but it may be that he will not, and the tenant has not sufficient confidence in his undisturbed possession, until he gets ample return; but drained it should be. The undertaking may be too great to attempt all at once, but if he make but one drain a year, he will find his account on the very first crop in its vicinity, the benefit will be seen half a perch on each side his drain; and if he can make two, one perch distance from each other, he will see a marked difference, two perches wide, the whole distance. We can imagine that there are many situations where there is no outlet, or a bad one, for the water, but we will grant the piece of land is in the midst of other property, and that there is no ditch, nor any means of discharging the water; this is the worst position a man can occupy, and draining would appear, at the first blush, to be useless. This land, to aggravate the matter, shall be a dead level. In this worst of all cases, he must select the best place for a pit, or pond, or an open well, whichever shall be the most convenient; but if the room be no great object, a pond might be made useful in many ways. Now, as two feet six inches clear of the surface must be left above the drain, that double trenching, and all other operations, may go on without disturbing the work, the drain must be dug three feet deep at the highest point, and a slight fall must be made towards this pit or pond; the drain being eighteen inches to two feet wide at top, and carried down to a point, thus V: and summer time should be chosen, when the water lies low, because, in addition to all his other grievances, we can imagine that in winter his pit will be filled above the mouths of the drains.

Of the various modes of forming the permanent drain at the bottom, the best is round drain pipes, two inches in diameter, which may be purchased at a moderate price; these laid along the bottom, end to end carefully, and bedded to their places, with rough stones laid from two to three inches above them, and the earth returned to fill up the trench, will keep up an effective drainage for many years; and the advantage, even on stiff clay land, will extend half a rod on each side. But suppose the water chokes the ends of the drain a month or two in the winter, we may be told the drainage is useless, which we respectfully contradict, by saying, that if we reverse the thing, and there are but two months in the year that the drains can run, the draining will be of immense service; for even in that case the land will be relieved of stagnant sour moisture one portion of the year; and every shower of rain during that period will wash down the impurities and supply its own refreshing qualities.

Again, if there be a pump to this pit, or well, or pond, that all the water required may be taken from it, it may frequently be reduced below the mouths of the drains; and however little they may be relieved, much good will be done.

We once had a worse position than we have now described. The portion of land was not large, but it was wanted for a flower-garden, and we believe it never had the water lower than three feet from the surface; but one hot season, the whole time we occupied it, we had only a three-foot well, six feet deep, bricked in the ordinary way. Into this one drain, four feet deep, across the bottom of the small flower-garden, a quarter of an acre at most, ran; into this drain others, three feet six inches deep, made with pipes, and one perch apart, emptied themselves (when they could); we had a powerful pump, whose drain, not eighteen inches below the surface, emptied itself into a public ditch, always nearly full, and carried off waste water. We have very frequently had this pump going half a day by common labourers, often without diminishing the water in the well half an inch, for the first two hours; for evidently the drains, when full, could feed the well faster than the pump could relieve it, and therefore kept up the water to the level. There was, however, one thing certain, getting rid of so many tons of water did great service, made a change instead of keeping it stagnant; and the best proof of the efficiency of even this imperfect drainage was, that we could grow in perfection things which previously we could not grow at all. We have mentioned this, worst of all cases, to show the use of even imperfect drainage: we now have to mention other modes of draining. If pipes cannot be had, large stones, that will not reach the bottom, may be used, and thick turf, grass downwards, put on them will answer—sometimes quite as well. If stones cannot be had, thick lumps of turf, six inches wide, placed close to each other, will leave a good run at the bottom; and if even this cannot be had, the clipping of hedges will do, put in so as not to reach the bottom, pretty nearly a foot in depth, and covered with turf or stiff clay, merely to prevent the returned earth from washing through, and will last many years.

Having shown how draining will do under every disadvantage, we will now suppose there is an outlet for water at the lowest, or, indeed, any part of the ground; let there be one drain go along the side of the ground best calculated for the main drain, which should be the largest and lowest, and let parallel drains, one rod or a perch apart, go into this main drain, which leads to the outlet. Where the ground naturally slopes, let the drains be straight up and down; all whimsical notions as to carrying them diagonally are wrong. The more a drain slopes the more rapidly it carries off the water, and that which is a straight line from the upper to the lower point is far better than one in any other direction. In fact, fanciful drainage is all nonsense; the shorter the line from the highest to the lowest part the more rapidly will the water escape. A friend of ours was recommending the drains to be cut herring-bone fashion, while we recommended the gridiron for a pattern, and ultimately two neighbours adopted the opposite plans; but the diagonal lines did not, after rain, run half so fast, nor nearly so soon, as those which were dug direct from top to bottom. Many cases will occur to render drainage *less* important; but ground laying, as it is called, high and dry is not one of them. On a portion of Richmond Hill, the ground is full of springs in winter, and cracks, by downright hard baking in summer, leaving openings two or three inches wide. Whether this has been drained since we know not; but drains, three feet six inches deep, in straight lines down the hill, would have rendered this land always fertile —always dry in winter and moist in summer. The same cause which prevents the water from keeping down in winter prevents its rising by capillary attraction in summer; and thus we have a swamp, till the sun bakes the soil, kills the herbage, and cracks the earth. If a man has good average healthy crops, without any extraordinary cost of manure, independently of wet or dry seasons, he may dispense with draining; but if his crops be uncertain, or less than average, or liable to frequent disease, or blight, or failure, he may safely conclude, that however troublesome and costly it may be, he had better drain: and, as we before remarked, if he can only do one drain in a season, let him set about it cheerfully; for he will see the benefit so clearly in the very first crop, by comparison with that beyond the influence of the drain, that he will not be happy until he has drained it all.

Of Soils, and their Improvement.

There is nothing which, after draining, is more essential than well pulverising the soil; digging is far better than the best and deepest ploughing. If there be but a shallow mould, and the subsoil, or under part, is hungry, or sour, or stiff, or gravelly, the good mould only should be kept at top; but the under portion should, nevertheless, be disturbed; and, generally speaking, a small portion will be brought up every time the ground is dug, and by degrees be mixed with and form part of the cultivated portion. Trenching, bastard-trenching, or digging, are the three operations with the spade. In trenching proper, a space being marked out, say a rod wide, and the whole length to be dug, a trench, one spade deep and two or three feet wide, is dug half way across it at one end, and the soil taken out and thrown or wheeled to the other half in a heap. If the under-soil be good, another spade depth is dug, and the stuff formed into a separate heap, but close to the first. The bottom of the trench may then be loosened. Commence, then, a second trench, the same length and width as the first, throw the top spit or spade's depth into the bottom of the first trench, and half fill it even all over, next dig out the bottom spit and fill the first trench full; but, in fact, it will be more than full, because the ground being all loose will be considerably raised; then having loosened the bottom, as in case of the first, begin a third trench. Continue till you arrive at the end of the half-width you begun; of course your last trench will be empty. You then turn round and make a trench on the half not begun, and with the stuff taken out of this fill up the other. You then continue the other half until you arrive at the end where you begun, where you will find your heaps of soil ready to fill up your last trench, and thus complete your job. Some people dig the first trench all across their work, and wheel all of it to the other end. This, however, is vastly increasing the labour without an object. Bastard-trenching is only making the trench one spade deep, and digging up the second but leaving in the bottom. Digging is merely turning the earth one spade deep; but we have to make the trench just the same, and with a second fill up the first in the same way. Proper trenching, therefore, is putting the second spit of earth on the top, and burying the top spit; bastard trenching is leaving the bottom spit where it is, but loosening it a spade deep; and plain digging is turning the top spit only.

Dressing the Ground, or Manuring.

According to the soils we have to manage, so ought we to dress and manure the land. In stiff clay soils, we can hardly do wrong by adding anything; whatever will divide the stuff is good—loam, chalk, ashes, lime, road-sand, dung, decayed vegetables, peat-earth; in fact, there is nothing scarcely that can come amiss. Then, again, leaving the soil in ridges, or rough, through the frosts of winter ameliorates it a good deal; and the more frequently it is dug, trenched, and knocked about the better. Peat soil, which abounds in our waste lands, is hungry. If it be practicable, put two bushels of good lime to the rod; clay, marl, road-drift, decayed vegetables, and any better soil spread over and mixed with the surface spit, will improve the soil: whatever will give heart to the land must be good.

The most powerful manures, are night-soil, pigs'-dung, the contents of cess-pools, cleanings of ditches, leaves, rags, bones bruised, or dissolved in sulphuric acid; but, better than anything, to separate your own accumulated and prepared liquid manure, or compost, in as large a quantity as you can spare, will be efficacious. But if you have peat-earth you have the staple of excellent dressing in itself; for, by charring the top turfs you form peat charcoal, itself a good fertiliser, and you provide the best deodoriser and absorber of all the filth that you can collect; and when you return it thus enriched to the soil, you will have abundant returns.

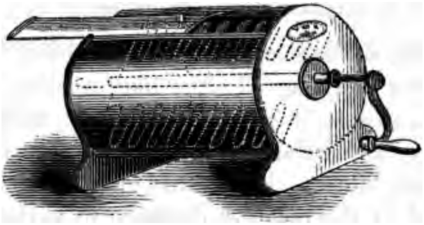
Gravelly soil wants more perseverance than any other, because it is the most hungry; and of some it has been said, that if a five pounds' crop is wanted, you must put on ten pounds' worth of dung. Clay and loam are the best helpmates here; for unless these, or some substitute, be added, the dung washes through before the plants can benefit by it to one-half the extent they ought; and to change some of this land to usefulness would almost cost as much as the freehold would be worth when done. However, if clay can be got, and the stones be got rid of, the most hungry of all gravelly soils would be convertible. If there be clay or marl in the neighbourhood, put on these at four loads to the rod, and endeavour to get a market for the shingle. This can very often be done; the surveyors of the roads may be glad to let you take away from road-sides and wastes as much clay as you want, and allow you something for moving the large gravel to the spot most convenient for road-mending.

However costly the remedies we propose may be, it must be recollected, that every step towards such remedy is an improvement. It does not follow that because we say, "Put four loads to a rod," it must be advantageous. It is also to be borne in mind, that we are advocates of spade labour, not because it gives employment merely, but because it lets air more freely into the soil, pulverising it better, and, consequently, produces far better crops. We saw, however, a "digging machine," so called, in operation at Mechi's Tiptree Farm. This will be found very useful, although it should be called a forking machine. It tears up the ground well, about eight inches in depth; but it requires from four to five good strong horses to work it, whereas men could do it better, if not quicker, and the ground would not be rammed together with the trampling of heavy horses and the weight of iron they have to drag. On some lands a fork would be better than a spade, and just as good for the crops; but to small farmers, cottagers, and allotment-holders, manual labour is the most convenient, as well as most profitable. With regard to the difficulties attending the dependence on manual labour, the worst is the slow progress of the work as compared with what can be accomplished with machinery. A plough, harrow, sowing-machine, and roller, can accomplish a good deal in a day, and a fine day can be often caught in the country. Manual labour is slow, but a man need not dig all before he sows any. On the contrary, the best policy is to sow as he goes on. Say he digs but a single land, let him sow it before he digs another: complete all operations as we go on. Then, again, a man having a neighbour in the same predicament with himself, they learn to help one another. A assists B to-day, and rids one of his jobs completely; B helps A the next day, and thus both are much benefited. There are many jobs that two men can do in much less than half the time that one would be at it, and would do it better also. This kind of feeling should be cultivated as much as possible; there is no knowing the extent to which real advantages could be secured by all, if the system of helping one another were carried out. We have seen among allotment-holders four or five busily employed on one man's holding, and another day the same men at work on another. By this means many things which would hang heavily on one man's hand are done quickly, and the very "change of work is a holiday."

A Chapter on Implements.

Although for the humble farmer we recommend spade and fork labour as the most convenient and profitable, we are obliged to admit that, in our uncertain climate, we cannot afford sufficient length of time to so cultivate single-handed, or nearly so, any quantity of land. Many implements, which facilitate our operations at seed-time and harvest, are necessary. Large manufacturers, in all parts of the kingdom, have obtained patents for sowing and reaping machines, ploughs, scarifiers, clod-crushers, thrashing and mowing machines, chaff-cutters, and scores of contrivances for superseding human labour, or facilitating our objects by saving time or money, or both. One of the greatest conveniences afforded of late years, is the establishment of a depôt in London, where all these various fruits of ingenuity may be seen collected, besides an enormous stock and great variety of all the ordinary tools for manual labour Of some we shall give a short description, such as the patent mowing machine, which, however, is for short grass; and the self-adjusting scythe, a most valuable improvement on the ordinary instrument; two or three churns, an iron barrow, improved pig-troughs, milk pans, etc., made of iron; manure pumps and engine, corn rick-stand, and things within the compass of men's ordinary means. For, although the vast mass of hard working men who do a little in the farming way can purchase nothing beyond the cheapest and plainest tools, there are those who purchase the more expensive machines and apparatus, and let them out to others for a reasonable sum, so that the poorest farmer in some neighbourhoods can obtain the use of costly machinery for a trifling rent, and thus accomplish a large portion of work in a short time. This is more especially important at those seasons which are pressing. It is exceedingly convenient to all who are interested in the land to be able to see at Dray's depôt, Swan Lane, Upper Thames Street, all the modern improvements made by the celebrated machinists all over the world.

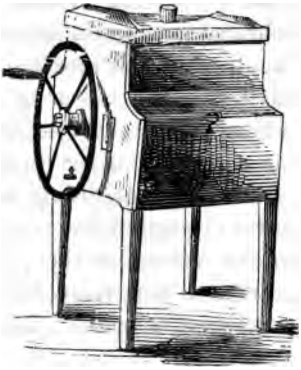
The various kinds of churns invented within the last few years, greatly lessen the labour of butter-making. Among those which present altogether new features, the Metallic Sussex Churn, which may be placed in water of any given heat, according to the weather, enables the operator to regulate the temperature, which is so essential to the success of the process; thus, in hot, broiling weather, it may stand in cold water, and *vice versa.* The machine is simple, and not easily put out of order.



METALLIC SUSSEX CHURN.

Willerd's Patent Churn claims to stand high, because it salts, cleanses, and works out the butter-milk, without requiring any handling; and the inventor professes to show that the butter is much better than that made by any other churn. This churn has produced 5½ lbs. of butter from five quarts of fresh cream in seven minutes. One of the American churns is said to have taken fifteen minutes to produce 5 lb., whereas the butter produced by Willerd's was worked, salted, and weighed, within the quarter of an hour.

Anthony's Patent American Churn is exceedingly simple: the representation speaks for itself. It has the advantage also of cheapness.



ANTHONY'S PATENT CHURN.

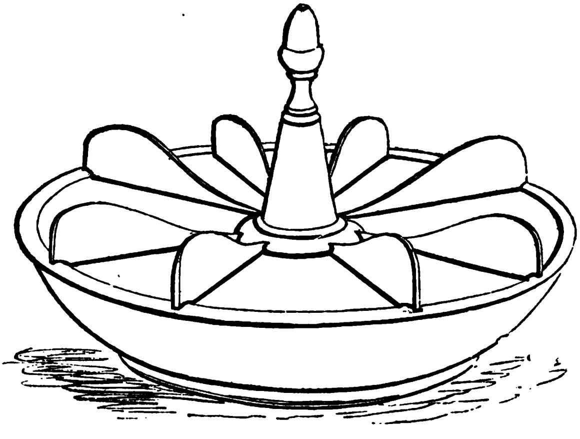
Dalphin's Self-adjusting American Churn, like the other, claims patronage for the like capacity, to make the butter, cleanse it of the butter-milk, work in the salt evenly, and turning it out of the churn a solid mass of pure butter. It is turned one way to make the butter, and in the opposite direction to gather it, and work out the butter-milk.

One of the most useful articles for the small farmer, as well as his more extensively occupied neighbour, is a grind-stone; but, as we all know, ninety-nine may be seen with a common handle, or with two, one on each side, and even the hundredth may be similar. The new way of constructing them, with a treddle, is a great improvement. First and foremost, we are not obliged to get any one to turn it; and next, its motion is so much quicker, that it does its work sooner and better.

The friction is destroyed by anti-friction rollers, and a man may turn it with the use of his foot only, he being at liberty to use his hands as he pleases, in adjusting the article to be ground. This grind-stone supplies all that can be wanted in the ordinary way of grinding, and can be used without the aid of a second person.

Iron is rapidly displacing wood in the manufacture of many articles; but in none is the change more important than in wheelbarrows. The advantage of them is in the lightness and the capacity: a barrow the same size outside as a wooden one would hold much more, on account of the iron being so much thinner; or, if made the same size within, it will be so much smaller altogether. The iron wheelbarrow has been in use a good deal, and is proved to be better than wood, independently of its lasting qualities, and its easy working.

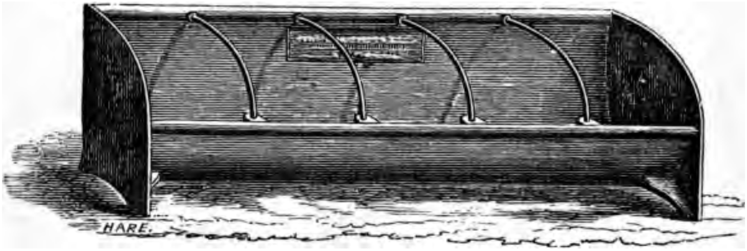
Iron is also used for the dairy and the piggery. The milk-pans of the one, and the troughs of the other, are manufactured lightly and ornamentally, and can be



CIRCULAR PIG TROUGH.

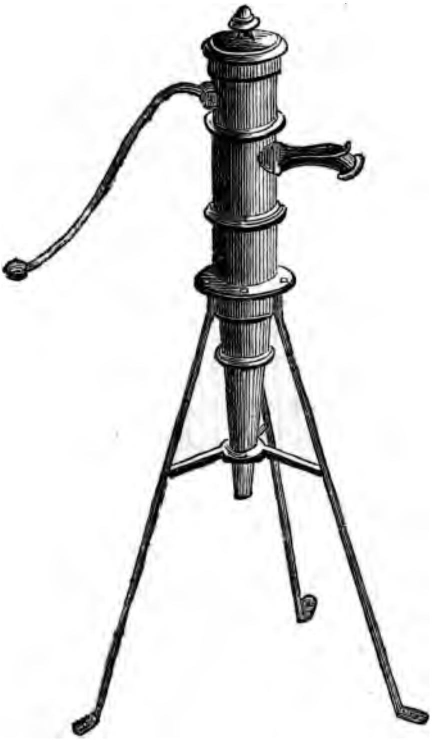
enamelled inside that; they may be kept free from dirt easily, and be wholesome, preventing, as the enamel does, all attacks of rust. This manufacture has been carried still further: water tanks, mangers, and kitchen utensils, have been enamelled inside, and the advantage has been generally acknowledged. The milk pans have been adopted in many dairies, and are found to be efficacious and economical.

The pig-troughs, both for food and water, have been very generally adopted, for they are everlasting wear; but are made, besides the ordinary form, like the annexed figure, and various other shapes. Some, instead of being angular at bottom, are rounded, and more easily cleaned out by the pigs, and instead of being made long, are circular, with divisions.

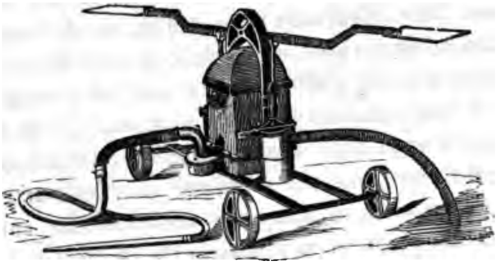


PIG TROUGH.

We have already spoken highly of liquid manure: first, because it is easier to apply to the ground; secondly, because the crop has the benefit of it immediately, instead of waiting until it be decomposed, as it must, if the dung be laid on in a solid state. The following is an engine for pumping the liquid from the tanks, also a portable engine to spread it on the ground, things not always within the means of the smallest farmers, but which soon pay their expences, when once adopted.

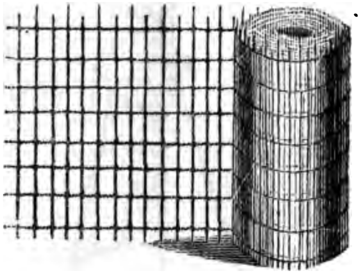


MANURE PUMP.



SPREADING ENGINE.

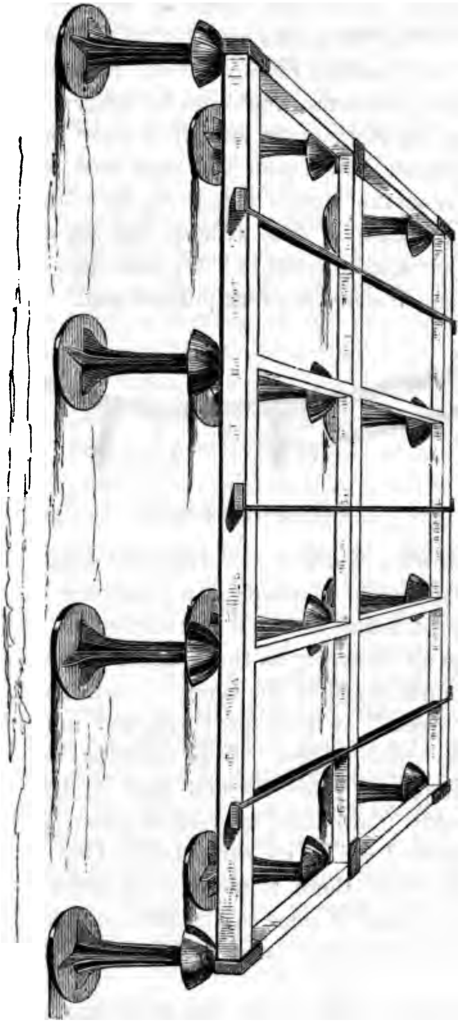
Various iron fences, in wire of different thickness, will often be found the most appropriate, as well as the neatest protection. It may be had from the thickness of a lady's veil to six-inch net-work, or more. The fence will keep out rabbits, which are often destructive.



GALVANIZED WIRE NETTING.

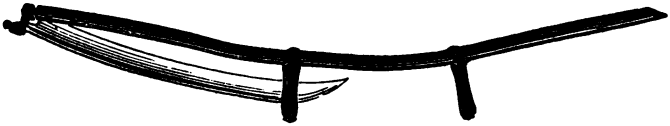
The larger is only intended to keep off sheep. It is used, therefore, as a protection to young trees, until they have advanced enough in growth to protect themselves. Iron hurdles come next in strength, and may be had to keep out horses and cattle.

In building ricks of grain, or beans, the old method of placing them on, or near the ground, is generally abandoned, and a stage is used, similar to the sketch following. This effectually preserves the stack from rats, mice, and other vermin, which will, if near the ground, sometimes actually gut the lower part of a stack, and destroy a large quantity of the produce. It is found much better even than the old fashioned stone pillars, and wood frames, and the standards are high enough to enable a man to clear away any accumulating rubbish underneath, which is too frequently allowed to be a complete harbour for vermin.



RICK SETTLE.

One of the improvements of consequence to the small farmer, is the Self-adjusting Scythe, which, by merely turning the screws attached to the parts, can be placed in any position in two or three minutes; for any one of common sense would not be longer. Hanging it for long or short grass, for tall or short persons; in fact, no matter how a man has been used to hang, or handle his scythe, Boyd's patent can be adjusted to the same in a minute or two, without the aid of anybody but the one who is to use it. We have had one in use a year; and it answers every purpose well.



SELF-ADJUSTING SCYTHE.

The Mowing Machine is worth mentioning, although it is not so much a farming as a gardening implement. It is pushed before us like a common roller, and shaves the grass off as evenly as the cleanest mower could do it, and in one tenth of the time. It will not, however, cut long grass. It is fit for lawns, and must be used when the grass is dry. This machine has been so greatly improved since we first used it, that it saves considerably more time, is worked easier, and not so soon damaged as in its early days. One of them is necessary where there is much short grass to keep in order. It is used in some of the provincial horticultural gardens, and in the large gardens of Buckingham Palace.

Ploughs of many varieties tempt the farmer, and you may go into two or three adjoining fields and not find two alike. Harrows and clod-crushers, sowing and reaping machines, scarifiers, horse-hoes, chaff-cutters, machines in all kinds of form, and implements without number, are now provided to get rid of manual labour, but nothing can beat digging, if it can be done; and with small farmers this is not only practicable, but profitable. Nevertheless, we must concede the important fact, that in any large concern, it is not possible. Subsoil ploughing has done much, for the deeper the ground is stirred the better; and we have, at length, a machine to dig, or fork and stir the soil ten inches deep. It is called a digging, or forking machine, and having had the gratification of seeing it at work, on the day of the Tiptree gathering, at Mr. Mechi's farm, we can say that it tears the earth up admirably. We can foresee that there will be improvements on this machine, suggested by its constant use; but it is as far before ploughing as can be imagined, because the soil is torn up to the full depth of digging, and the air let in to the bottom. From the pace at which it travelled, we should think it would do the work of fifty digging men. The machine has been at work since in the metropolis, and with great effect, for though farm land is generally no harder than the forks of the implement will penetrate and tear up with apparent ease, Kennington Common has been trampled on for years; and the loss of a tooth or two in tearing up that solid plot, which was an unfair trial, did not, in our estimation, tell against it. The numerous contrivances to facilitate the tilling of the ground, now forms a complete museum; and those interested in farming, have to thank Messrs. Dray and Company, of London Bridge, for collecting the works of every machinist worth notice into their depôt, where they remain for the inspection of the agricultural public, and where, in fact, every instrument used in agriculture, horticulture, and ground-working, may be seen in perfection.

CROPPING THE GROUND.

WHETHER a man intends to use all his produce at home, or sell a surplus, must depend on his means, his quantity of land, and other circumstances; but he should cultivate those crops which are always saleable, but which are not perishable, in preference to any thing that must be hurried into the market. Grain, beans, potatoes, mangoldwurzel, carrots, down to any thing that will keep for a time cannot come amiss; but green crops must be carefully adopted in only such quantities as can be used, and we recommend spade labour in preference to the best ploughing, so far as it can be carried out. In planting or sowing we do not like waiting till the entire piece be dry, but dig in strips, and as soon as a strip is dug and prepared, sow or plant it. There may be ten days or a fortnight perhaps between the first and last planting of potatoes or sowing of mangoldwurzel, but the crop on the average will be none the worse for it. We admit that it is very desirable when it can be accomplished, to take advantage of weather by rapid operations, and that once now and then a man may, with advantage to himself and not much injury to the crop, obtain the loan of a plough, but let this be only occasionally, not the rule, but the exception; he will soon discover the difference between the crops after the plough and those after the spade. In dressing the ground he must bear in mind that liquid manure is very superior to the most rotten muck, and therefore he should provide himself with the best means of using it to the best advantage. A tub on wheels or in a barrow, is the most simple, by a tap-hole at the side close to the bottom he can let out the liquid; but it would be too sudden unless checked or distributed by some means. A contrivance like the rose of a water pot will do, but the best is a hollow pipe full of holes, which may be made to distribute the liquid a width of two feet so far as it goes, and a plug to withdraw and let go the liquid as soon as it arrives where it is to begin. A water-cart is handy, but a regular full-sized butt, lying on two wheels, with a wooden trough behind to receive the liquid from the butt and distribute it through holes bored all the length, is better than anything if you have cattle to draw it. Still, with limited means, a man may perhaps compass nothing more than a tub and barrow. It may be worth mentioning, too, that laborious as it may be to manure the ground this way, the crops will more than compensate for the trouble and labour. If you have an abundant supply, be not afraid of overdoing the land. The more fertilizing liquid it has, the more abundant will be your crops. In selecting your crops, then, first provide for the live stock you intend to keep, and feed every thing at home. A cow will yield more milk when well housed then she will on the best pasture, while the dung is easily preserved. For her use you must provide the necessary quantity of greenmeat, mangoldwurzel, carrots, swedes, clover, or hay. If you keep one or more pigs, provide accordingly, and do not omit plenty of potatoes. If you keep fowls, turkeys, ducks, geese, pigeons, find a piece of ground for the production of the things you require. Having made allowance for all these, or for whatever you are likely to consume, let the rest of your crops be saleable and not perishable; for all the perishable crops must be sold at the market price however unfavourable, whereas if a crop will keep, you need not be driven to sell under disadvantages. In giving a sort of Calendar for the operations of farming, we desire that each one who reads should only attend to what concerns him. Use that portion only that relates to his own affair. If we say "sow turnips," we do not mean that a man who wants something else a good deal more than turnips should nevertheless attend to us; but, that those only who want turnip crops should know that it is a proper time to sow them. Perhaps in all the calendar not half a dozen directions may apply to one man, while two-thirds of them may be useful to another, and perhaps all of them may be to a few. Before, however, we enter on the Calendar, we shall offer a few remarks on particular crops, especially those which concern the small farmer.

THE PARSNIP AND CARROT.

These useful productions require that the ground should be trenched and well pulverised; and it is better that they be sown or dibbled in at two different seasons, say half in March the other in April. In some seasons one of these crops will fail and the other succeed, but as this is sown in time to appropriate the ground to other purposes, the price of the seed is the only loss. If the ground be tolerably rich and light, a heavy crop may be expected. If they are sown very lightly in drills six inches apart, the thinning of them out to four inches, distance in the rows will enable them to grow well until large enough to eat, when every other plant in the row may be drawn out and the crop be left six inches apart one way and eight the other. If, on the other hand, they are sown broad-cast, that is, spread over the land, they must be hoed out, as soon as they have begun to grow well, to about the same distances as when they are sown in drills. The only after-care of these crops consists in keeping them clear of weeds, and drawing all that are wanted for present use carefully so as to leave the remainder plenty of room. It is true that many finer carrots than those drawn will be left, and those who draw them are too apt to pull the finest and leave the rest to grow, making the crop unequal, too thick in some places and too distant in others, but this should not be done. The main crop is the object; and if this be not attended to it will run short and unequal. When they are full grown they may be taken up and stored. The leaves may be given to the cow or thrown to the pigs, or dung heap, and will be found useful in either case. The best way to store them is to pack them close with sand or light mould between them to keep out the air, and they should be stored in a cool place, free from frost.

MANGOLD-WURZEL.

THIS crop requires strong ground and good dressing, deep trenching and good pulverising; but if the ground be naturally poor, make up for it with plenty of manure. When the soil is in good condition, and levelled for the sowing, dibble in the seed two inches deep, nine inches apart in the rows, and the rows a foot asunder. Let any woman or child follow the one who makes the holes, and drop two or three seeds in each hole; a little earth may be stirred into the hole with a bit of stick, carried in one hand, as fast as the seed is dropped in with the other; in fact, it only requires the side of the hole to be broken in upon it, there is no occasion to fill it up. As soon as the plants appear, and have a rough pair of leaves, all but the strongest may be drawn out, or if preferred, they may be allowed to grow until it is seen which takes the lead, and the others should be drawn. The ground may then be hoed, to get rid of the weeds, and the crop will soon cover, so as to kill any young ones; if not, they must be kept clean with the hoe. Very little more will be wanted, when the plant is in full vigour. Many people gather the leaves, but if any be required for food, none but those fully developed should be taken; perhaps the largest two, when full grown and ripened, as it were. The plant will be none the worse for losing one or two of the oldest, but gathering them too close prevents the full growth of the tuber, and therefore detracts from the crop. There may be always enough leaves taken from the plants to be of service in feeding the cattle without distressing the crop. At the approach of winter, and when the roots have acquired their full growth, they may be taken up, the leaves all picked off, and the roots, or tubers, stacked in the same way as potatoes. Dig a pit in the dry part of the ground, say a foot deep, four or five feet wide, and as long as is required, pack them in this as close as they will lie together, layer above layer, making every layer, after they get above the ground, smaller, like a bank; on this put straw, six inches thick, and then bank up the earth another six inches thick. This will effectually exclude frost, and as they are required for cattle, or the market, take them from one end only, and cover up after you have taken what you want, because, if exposed at one end, the frost affects them a considerable distance. If you do not want them for cattle, and have a ready market for them when taken up, it may be better to dispose of them at once, than to pit them; but generally, they are much dearer in mid-winter, and bring much more than pays for the trouble of keeping them. A good deal depends on the quantity grown in the neighbourhood, and the probable consumption, both of which must influence the decision, and ought, in fact, to be considered before you even grow such a crop. In the vicinity of large towns, there is generally a great demand for it before the winter is out, for stall-fed cows, and your own cattle, if you have any, will thrive upon it. It is very necessary that your seed, for all crops, should be obtained of the best quality, and this can only be secured by dealing at a respectable house of business. The period of sowing should be April, but favorable or unfavorable weather will influence. Fine weather, and ground in good order, would tempt us to be earlier, and wet, or frosty weather, would induce us to delay. From the middle, however, to the end of April, is the best season, if it can be done.

TURNIPS AND SWEDES IN PARTICULAR.

THESE are best sown in drills, and if you use liquid manure, you may be careless about the state of the ground, for if the manure be applied just before sowing, and the seed is in and covered while it is damp, the germination and growth will be rapid. The drills should be nine inches apart, and the seed be sown very thinly, because they must be ultimately hoed out to that distance in the row, or nearly so. The thinner they are sown, the less seed will be wasted. Many, however, prefer to sow broadcast, as it is called, that is, evenly all over the land, and to hoe it out afterwards. The best time for turnip sowing is in fine weather, after a good heavy, or soaking rain. It is then up and growing rapidly before the fly can take it. When the plants have rough leaves, give them the first hoeing, to thin them out to eight or nine inches apart all over; but at the first hoeing you need not hoe out every single turnip, there may be two or three very close together, forming rather small patches at these distances, and after a little growth you will see which takes the lead, and remove any others; at the same time, it gets rid of all the weeds, till the plants can keep them down. If you can give them liquid manure, which, when adminstered to growing crops, must not be too strong, you will derive all the benefit in an increased crop; but much depends on the weather. If the season be favorable, the turnip crop will come well with no other help than well dressed ground; but if dry, and not favorable, a good application of liquid manure will pay the small farmer, and especially if kept clear of weeds until well forwarded. And, however much may be done with the machines in use for drilling, and horse-hoeing, our business is with those of humble means, who cannot command those conveniences.

POTATOES.

WHETHER this excellent vegetable is considered as the food of man, or of beast, it is a crop which should never be neglected, but, on the other hand, it should not be cultivated to too great an extent,—one-fourth of the land is as much as should be appropriated under any circumstances. There is such a variety of sorts now, that it is necessary to be particular in the choice. One of the great points to be estimated by the farmer is, to secure one that will produce heavy crops; and another is, to adopt an old and approved, and, therefore, a cheap kind, as the seed would otherwise be expensive. The Shaw's and Regent's, and the true Forty-fold, will be found all good. The next point is, to make sure that they have not grown in store, for all that the potatoe grows before planting weakens it, and injures the crop. Much difference of opinion has been expressed as to the propriety of using whole or cut sets. We prefer whole sets of middling size, to cut sets of any size. A set as large as a hen's egg is large enough for anything, and these may have more room than cut sets. A tall growing potatoe must have from two feet to two feet six inches between the rows, but more dwarf kinds may be planted from eighteen inches to two feet; and whole sets may be planted a foot apart in the row, while cut sets need not be more than nine inches apart. Many plant them from April to May, but if it can be done, we prefer autumn planting. If the potatoe ground be planted with rows of coleworts, or early cabbages, two feet apart, the potataes may be dibbled in six inches deep between them. In this case they protect the potatoes when they come up, and are all drawn before the final earthing up: and as the crop is generally heavier and earlier, they require good earthing. But looking at the general convenience, and the possibility that cabbage may be got off more at leisure, the potato may be planted in April, May, or June, yet, the earlier the better.

The best way, perhaps, of planting is to draw drills, and drop the seed in, and cover over with the earth drawn out on each side. These drills should be from eighteen to twenty-four inches asunder, the latter distance being the best. As soon as they are well above ground, earth should be drawn to them, so that they are nearly covered again, and after they have made good growth, a second earthing should be given to them, the spaces between them being cleared of weeds at the same time. They will after this take no harm. When the haulm begins to turn yellow and brown, prepare for taking them up. This should be done with a regular potato fork. The large ones may be selected for family use and market; those the size of an egg may be saved for seed, and all the small ones laid by for feeding.

The best way to preserve potatoes, if you have convenience, is in a cool dry store-room, beyond the reach of frost, where they can be moved from one side to the other occasionally; where, however, there is a great bulk, they may be pitted in the same way we have described for mangold-wurzel. Potatoes, like many other crops that may be preserved, bring the least price at taking up time, because many wish to make their market without any trouble, but they mostly rise enough to pay any one for the labour of keeping them, and leave a good balance for profit even on their extra trouble. When none but large potatoes can be obtained for seed, cutting becomes necessary, and the only rule for this is, to have one strong eye, at the least, to every piece; these pieces should be immediately put to dry; and they will be the better for a dust of lime shaken over them, and being stirred about till the cut surface is covered with it. They must, on no account, be laid in a heap, or they may become mildewed before they dry. It matters but little if they are kept some time, nor how dry they become. These sets are planted just the same as whole potatoes, and in all other respects treated in a similar way.

There are many ways of cultivating this plant to bring early produce, and some methods which are said to produce more than average crops; for instance, some put a good bottom of dung, on which the sets are laid, and the earth thrown on them, but we prefer having the ground kept in good heart, and all alike. The quality is better, and the crop more even, nor are we sure there is any advantage as to quantity. To bring them sooner, is no benefit to the farmer, except for his own eating, and then they may be hastened by planting them at the foot of a south wall, or bank. Earlier sorts also can be obtained, such as the Ash-leaf, Kidney, the Fulham Early Round. Some adopt the plan of planting them in July, and taking them up in November, when they are like new potatoes; and, if left in the ground covered against frost, they may be dug up at any time between November and May, with a skin as bright as new ones. When at market they bring a considerable price: and, although the retailers know all about the growth, they gladly give a good figure, because they have no difficulty in getting rid of them at a price a little less than they have to charge for new ones. Almost any small potatoe will do for this treatment.

CABBAGE.

THE larger sorts of cabbage are useful for feeding cows and pigs, and as it is a crop to be had at all times, it is frequently profitable; but it must only be grown in such quantities as will answer the consumption. It is not a crop that can be laid by for any time like carrots, mangold-wurzel, and parsnips, nor fed off like turnips. It is, however, an excellent family crop, and somewhat wholesome and nutritious, as well as a general favorite. It is a crop, too, that may be sown in spring, summer, or autumn, takes no great quantity of room on the seed bed, and may be planted out at any period to ccyoup otherwise vacant ground; but for general purposes, it is not necessary to grow the large kinds: for feeding cattle, they are the most profitable. The middling kinds are, however, best for all seasons; while young, they may be planted out thick on any idle spot, to occupy it for a few weeks only, for they are marketable, and eatable from the time they have half a dozen leaves to the period of full growth. At first, and up to the hearting, they are good as greens, and are similar to those done up in market bunches, although not the precise variety adopted by market gardeners, who generally select a kind that gives growth up to a certain point, and rarely make a good cabbage, if left to mature themselves. Cabbage seed should be sown in March and April, and in August. Some growers take no more trouble with the seed bed than they do with turnips, but merely hoe them out to the distance of three or four inches, and there let them stay till planting-out time. We always prick them out in rows, four inches apart in the row, and six inches from row to row, and give them this salutary check when they have six rough leaves. They are then ready to plant out almost any time, and in all places which are at all at liberty only for a few weeks. Therefore a supply should never be neglected, as they will bring a price if there be any cattle in the neighbourhood. They will supply the house, and may be considered worth the ground they occupy, even when left to mature as food for hogs and cows.

Ordinary sorts of cabbage may be planted out eighteen inches apart, in rows two feet asunder. The larger kinds will require, at least, two feet in the row, and three from row to row. After they are planted out and well established, hoe the ground, and draw earth up to their stems; and it may be understood, that all crops are so much benefited by stirring the ground between the plants, that every otherwise idle hour should be devoted to it, until crops are so far advanced as to master the weeds by their own growth. If food be wanted for pigs, the large outer leaves may be sparingly taken, from time to time, as they are matured, all over the crop, instead of being allowed to turn yellow and die off, but they must not be taken too close on any plant, because, if enough be removed to make any material difference, the crop will suffer. When they are very hard in the heart, they will keep a considerable time after cutting, the outside leaves alone decaying; but in feeding animals with them, they should be shredded, or if not, cut in quarters and boiled, and it may be observed as a general thing, that although it is of less consequence with some food than others, nearly every kind of vegetable is better for cooking. Many farmers have regular steam apparatus, and steam nearly all the food of their horses, cows, and poultry; still, with prime conditioned vegetables, animals take no harm feeding on them raw. The great advantage of this crop is, that when a piece of land is cleared, and is wanted for spring culture, young cabbage may be planted to be cleared at the proper time, whether grown or not grown to their proper size; and if a large portion goes to the dung hole, the loss is not very much worth notice, whereas it may be valuable. Cabbage may be all off in time for late potatoes and turnips, and if not ready, as will be the case in a late season, they are forward enough to afford green meat early in spring, and may be commenced by drawing out every other plant, for they should be planted for this purpose at half distances. It is desirable to plant out cabbage plants nine inches apart instead of eighteen, to begin drawing every other plant as soon as the crop is large enough to be useful, and continue using them until all are left eighteen inches apart. If there be any more required, or there is more than is likely to be wanted as full grown cabbages, to continue drawing them by clearing the ground as you go, until you reduce the quantity to your wants, and the space you can spare for the finished crop.

In conclusion, we may say there is not a single month in the year, weather permitting, but cabbages may be planted, and therefore there maybe three or four different seasons of sowing—April, May, July, and August; but two seasons are sufficient for full crops, April and August, about the middle of the months.

BEANS

SHOULD by no means be neglected where pigs and horses are to be fed; they help to diversify the crops. They are always a marketable article, and will keep. They may be sown in the spring of the year in rows, in drills two feet apart, and six inches asunder in the rows. This crop, like many others, requires attention at first to clearing the ground of weeds, and earthing them up; and they will always pay the small farmer for the trouble of topping when they are in full bloom, for it facilitates the swelling as well as setting of the pod. The bean is frequently attacked by the black fly, which at first feed on the tops; and if the beans are topped at the time when the fly is first seen, it will save the whole crop. Females and children will do this, and get over an immense quantity in the course of the day. If, however, they are neglected until the fly has spread itself all over the plant, it not unfrequently makes the crop scarcely worth cutting and gathering. These may be sown or dibbled into the ground, but as the simplest and quickest way is the drill, and the seed is large enough to be dropped at proper distances, even if the drill is drawn by hand, there is but little trouble required. A child may drop in the seed, and cover it over; and there is an advantage in drilling, because the ground is fresh stirred. Small farmers may, if their land be good, always turn it to good account by growing for seedsmen, who will always supply the seed to a man who can be depended on, and pay him a remunerative price for all the crop he can produce. It is necessary, however, that he feel assured that nobody but himself is to have a seed, and that the grower is careful not to mix it with any other kind, and to keep it clear of weeds; but of this more may be said hereafter. Beans of several kinds will be found marketable; the Broad and Kidney bean are equally profitable for growth, but the latter ought not to be sown till May, North of London; and the white kind are always saleable to any extent, as food.

WHEAT.

IN favourable seasons, the winter corn can be sown in spring, and bear a tolerable crop, but these favourable years happen so seldom; and, for the most part, each seed will bear only one or two stalks, and very small ears; but the summer wheat always succeeds when the year is favourable for spring corn. It is then this kind of wheat must be distinguished from the winter wheat. There are two sorts,—one with awns, and the other without awns; they are both wheats, but less than the winter corn. They make, however, good bread. Farmers often sow this wheat on their spring-corn lands; they winter-fallow it as soon as possible. After wheat seed-time, they give the land a second ploughing towards February, covering the seed, when they sow, with a harrow or a plough, according to the nature of the soil.

Summer wheat succeeds much best when it is sown on the winter-corn lands. If, for instance, the uncertainty of the weather hindered the farmer from sowing all his wheat in autumn, by sowing the land with summer wheat, he will be morally certain of a good crop; particularly, if the summer is not too dry. As this corn is less in size than common wheat, less in proportion must be sown. It is to be observed, that the summer wheat is as much subject to smut as the other; it must, therefore, be limed, and even washed in lye. There are two reasons which prevent farmers from sowing much of this wheat: first, because it shales much when ripe. If a husbandman sows only ten acres of this wheat, he can contrive to get it in as soon as it is ripe, or even rather before; for he would lose a great deal of corn if he had eighty or a hundred acres to get in, it shales so much. The second reason for not sowing so much of this grain is, that a farmer is under the necessity of parcelling his work. One hundred acres of barley and oats, to be sowed in spring, will fully employ him; what then would be the consequence if he had also one hundred of summer wheat to sow? By sowing his wheat in autumn, and his soft corn in spring, his work is regularly performed. In some cases it is, however, very profitable to sow summer wheat. When rain in autumn prevents sowing wheat, then the summer wheat comes in well. If by any accident, as frost or insects, the seed sown in autumn is destroyed, the summer wheat supplies its place. In countries where the wheat is subject to be devoured by game, the summer wheat is in least danger, not only as it is a shorter time on the land, but because, when it is green, the game is not in want of food. In wet soils, where the corn is subject to be flooded in winter, summer wheat had better be sown. Farmers ought every year to sow a little summer wheat, and not sell it till summer, when the dangers of winter are over, reserving to themselves that resource in case of need; this they cannot do when they are in a hurry to thrash it, and carry it to market, which is generally the case. Summer wheat will live through mild winters, and in that case yields a better crop than when sown in spring.

EGYPTIAN WHEAT.

MANY-EARED Wheat, which is called Smyrna, or Sicilian wheat, bears, on the principal single stem, besides the main ear, several lateral ears, so that the whole taken together is as big as a pullet's egg. The size of this ear seems to promise a plentiful crop. From seven pounds of seed, four hundred and thirty pounds of good corn has been grown, of which good bread was made ; but this again does not succeed, except in well-manured and well-tilled land, as it requires much nourishment. This wheat is sowed in autumn, on well-dunged and well-dug, or deeply-ploughed land: less seed is used than even of the summer wheat; in other respects, there is nothing particular in the culture of it.

RYE.

THERE are two sorts of rye, one sown in autumn, and the other in spring. The winter rye is cultivated like the winter wheat, and the summer rye like the summer wheat, except that it is sown a little later. The great use of rye is, that it thrives on light lands that are improper for wheat. As this grain is not subject to be smutty or burnt, they do not lime it. Rye is less subject to damage from the game than wheat, particularly the birds: it is, besides, easier preserved in granaries.

Rye-straw is not so good for cattle as wheat-straw; but it is very useful for making bands. Rye is sometimes sown to be cut green.

BARLEY.

WINTER barley is sowed at wheat seed-time. It is called square barley, because the kernels are fixed in four parallel lines, which give a square form to the ear ; it is called also bear and big. The kernels are large, and it is very fit for malt, as bear has a great deal of bran. As its straw is not very good for cattle, and as it is with difficulty kept, the chief benefit resulting from it is, that it yields good crops. It is chiefly sowed for poultry, and to be cut as green fodder for horses. We shall mention it among the artificial pastures. This grain is a great help to the poor in years of scarcity, though it is a coarse food: it is besides early ripe. Common barley, with flat ears, increases much; a great deal is grown in many countries. The barley to which some people give the name of rice, because its kernels are white, and have but little bran, is the Sprat, or Battledore barley. Every kind of barley yields large crops when it is sown in good land, well-tilled and dunged. In thrives better in kindly soils, than such as are stiff and clayey. In some provinces their crops of barley are of such consequence, that they cultivate it with as much care as wheat. Barley is generally sown on the spring-corn lands. After wheat seed-time, in February, or the beginning of March, it has a second ploughing, and is immediately sowed. If gentle rains follow, the barley comes on well enough.

OATS.

THE sowing time is spring, and the better the land, the better the grain, consequently well manuring and knocking about the soil agrees with it. Land, however, cultivated by spade labour, does not require a repetition of the operations. Once digging is worth half-a-dozen ploughings. A portion of oats may always be grown with profit. When they are well up, you may pass a roller over them with advantage; and oats must be cut before they are dead ripe, or a good deal will be lost. It was a common notion a hundred years ago, that oats should be cut green and ripened in the sheaves. There can be nothing better than cutting as soon as ripe and before they have begun to fall, and the small farmer can generally do this to a day, while those on a larger scale of operations may be disappointed. There is, therefore, some excuse for being a little beforehand rather than risk waste from over-ripeness. Oats may be mowed on level ground, but if on land or ridges of any great inequality, it is better to reap.

COBBET'S CORN.

INDIAN wheat has long been cultivated in England as a curiosity, but it may be grown with profit. For all purposes, in this variable climate, the dwarf kind, commonly called "Cobbet's Corn" is the most eligible; it is less affected by winds, which will frequently lay the taller kinds down. It is a less time on the ground, less troublesome while growing, and yields a better average crop. The best way to grow it is to make up a hot bed in April or early in May, to sow the seed thickly all over the surface, and cover it a quarter of an inch, and at the end of May plant it out in rows, two feet apart every way. Take, if possible, for planting out, a day after a shower of rain; all that is required after this, is clearing the crop from weeds. Of the use of maize or Indian corn it is difficult to give a full account, but, when boiled, it is excellent for poultry; when green, it is a dainty vegetable; when ground into meal, it makes a hundred different kinds of pudding. It keeps almost any length of time. The plant itself is excellent fodder for cattle. The crop is handsome and by no means troublesome. In favourable seasons, the seeds may be sown in the open field the first week in May by dibbling two seeds in a hole, and, when they come up and start for growth, pull the weaker one up, still the rearing of plants in a hot-bed, so as to plant them out in May, makes a greater certainty of the crop. When the bloom, which looks like a feather, has matured and begun to decay, let some one go round the field and cut them off. This is good fodder also, and cattle eat it with a relish. Crops of this kind will often conveniently occupy portions of ground that want a variety rather than a continuance of other subjects, and it is always a safe one, for even when it scarcely ripens, it is good fodder.

Buck-Wheat.

This crop is useful for poultry, and draws the game from a considerable distance. It is rather an aggravating crop to the neighbouring gentry; for although it is excellent food for their birds, they leave the preserves for the wheat, and are easily taken. It is a coarse grain, but may be sown in May and reaped in August; and if sown in June will be ready for the sickle in September, so that it is often sown after spring crops. If sown in autumn, it is occasionally cut off altogether in winter. The advantages of Buck-wheat being grown now and then for a crop are various; first, it will grow on poor land; next, it yields a heavy return crop; again, it does not impoverish the land; and lastly, there is abundance of good fodder in the straw. In some places it is used for bread, and is relished even where there is plenty of wheat grown. Buck-wheat wants but sowing, and may be left to take its chance till it is ready for the harvest; on this account it is a favourite crop in some districts, and especially poor ones—that is, districts where the land is poor and gravelly or sandy; and the worst that can be said of it is, that it is a useful crop as a change everywhere, though not so much grown as it might be. It is a strong growing plant, smothers the weeds pretty much, and may be sown broad-cast or in drill; and the heavier it is rolled the better, especially on light lands. A rod or two in a garden where the owner keeps poultry will yield a good produce and save buying barley.

PEAS.

THIS is one of the crops which depend for profit on the adaptation of the soil and situation. Where the land is well sheltered, and the crop is sown in autumn, it pays well, the sowing taking about three bushels to the acre, and the produce ten-fold. The crop, when threshed, leaves a straw which all animals will eat, and makes a capital litter for pigs and sheep cotes. The harvesting should be done quickly, as the dried pods soon open and expel the seeds. There is another good feature in this crop; it is cleared off in excellent time for turnips, which come soon after them. It would be idle to mention the sorts which are recommended by various cultivators. Dwarf they must be, and some are sown about two feet apart. They generally smother the weeds and clear the land. Sow any time in November or December when the weather is open, and when they are well up, hoe between the rows and earth them up a little. As they approach fulness of the pod, scaring the birds is absolutely necessary during the whole hours of daylight; for if they once taste and are uninterrupted they would clear off the crop in comparatively a few hours. Most crops are cut like wheat with the sickle, and laid in heaps or bound in bunches. If the weather be fine, a short time will dry them sufficiently to be housed or stacked; but the former is best, and the sooner they are threshed out the better. The haulm may be stacked for future use or given over to the straw-yard at once. The pigs will make a feast on them; horses will eat them while fresh and sweet; but if you can store the haulm it is the most useful of all litters. Peas were profitable in warm situations where there was scarcely any choice; the Hog-pea, the Prussian Blue, and one or two others, comprise all that the farmer formerly attempted to sow. There are now many early dwarf varieties that respectable seedsmen can conscientiously recommend, much more easily grown and better yielders.

Flax and Hemp.

Flax may be sown in autumn or spring like wheat, but the spring sown is finer in quality though less of it; and the autumn sown is considered to bring the best seed. It requires good strong land, rather inclined to be moist at bottom. It must be well worked and manured; and the working must be done in dry weather in the autumn, and left all the winter in ridges, that the frost may work through it well. In February the land must be dunged in the furrows, and the plough must cover it; and six weeks afterwards cross plough it and lay all level. We are presuming the land to be properly drained; but if not, surface drains must be made to carry the water into the ditches. The best method of sowing the seed is in drills, the seed being covered half an inch deep. It is of the greatest consequence to clear the crop of weeds as soon as they can be handled, and it is generally done by hand; but when sown in drill it can be cleared with the hoe between the rows and by hand in the rows. This crop is profitable; for both seeds and plants are available. There is a good deal of speculation on the mode of treating the crop, some gathering it green because the fibre is finer, others letting it have all the growth for the sake of the seed and quantity of fibre. We need hardly inform the reader that flax is the staple of linen; while hemp is of much coarser texture, and is made into twine, rope, etc. Therefore the crop has to be prepared after it is grown, to make the most of it. It should be pulled when the stalks turn yellow, the leaves begin to fall, and the seed is ripe. It should be pulled carefully, the earth shaken from the roots, the green stalks separated from the yellow, and all laid even with the heads to the south, that the unripe seeds, if there be any, shall ripen by the sun, and that all may be dried; some tie it up in bundles, as fast as they gather it, like so many wheat-sheaves. The band is laid near the head, and the roots spread out that the bundles may be set upright. The rain, if any, then injures but little, and it rapidly dries. When dry the seed is, as it were, combed off, that is, drawn through a fine rake. The usual way is to spread a cloth, let a bench with the rake, fixed teeth upwards, be set on the cloth, and then the whole of the flax is taken by handfuls and the seed end put on the comb and drawn through several times till all the seed pods are torn off; the plants are afterwards made into bundles again, tied at their ends. They are then put in a pond or under water to soak until the fleshy part of the stalk is destroyed, and the fibre remains. The greenest stalks are ready first; but it will be seen by trying now and then when it is ready. If the stem breaks short, and the bark comes off easily, it is ready. It is then removed and dried. It is subsequently baked, and, while hot, broken, as it is called, but we should rather say bruised or beaten, so that all but the fibre is got rid of. However, our object will cease with the growing. We have only mentioned these things to impress on the mind of the grower the necessity of pulling it at a right time. If it stands too long it will become woody, and if not long enough it will not have a good fibre; but as the seed is an object, it should be taken up or pulled as soon as it is ripe; and there will be no difficulty in getting rid of the remainder when the seed is secured.

HEMP is very much of the nature of flax, so far as its use is concerned. The growth is widely different. The plants consist of male and female, that is, seed-bearing and flower-bearing. The culture is the same, the sowing the same, but as hemp is a much larger and stronger plant, the weeding is not so essential. Two seasons are generally adopted for pulling; the one as soon as the seed-pods are well formed, is the first, when all the male plants are pulled and the seed-bearing plants left to perfect the crop; the next is when the seed is ripe, and the remainder are pulled. These are laid and grouped together, to heat or sweat a little. This perfects the seed, and induces it to leave the husk or shuck easier, so that light thrashing will do it; for the seed is soft and easily bruised.

THE TEAZEL.

THIS is a kind of thistle-head used in the dressing of cloth; and where the soil is suitable, it is a profitable crop, although the importation is greater than ever. The seed is easily procured. The most profitable method of growing is very similar to that adopted for raising cabbages, only that the teazel, being rather more tender, must be protected with litter. Sow, therefore, in a seed bed in July, cover against hard frosts, and in spring plant out on well-dressed ground, nine inches apart every way. Keep them clear of weeds. It is the seed-pod, which is armed with hooked spines, that is used by the manufacturers, who will always buy at a price that pays for the culture.

Lucerne.

This is a profitable green crop, and will bear three cuttings in a season. It is a common thing round London to sell the first cut at ninepence or a shilling a rod; the second, which is the harvest, at one shilling and sixpence; and the last, from sixpence to a shilling: but if it can be used at home for any kind of cattle or stock, it is still more profitable. The average worth may be estimated at three shillings per rod in the three cuttings. It is best sown in drills, on good land, in the month of March, eighteen inches apart. Some sow it only a foot. It must be regularly weeded. The time to mow it is when the flowers are half-blown, and as soon as it is cut, it grows again. There are sure to be three crops, often four, and, in some long, favourable seasons, five. As a hay-crop, it is uncertain, because a wet season for making, would utterly spoil it. It should only be attempted when there is a tolerable certainty that it will be got up without wetting. All cattle are partial to it. Horses fatten on it as well as oxen; and if the latter can get too much, they will occasionally kill themselves by excess. Cows give more abundant supplies of milk when fed on lucerne. In fact, it is the sweetest of green meat, and if well got up, invaluable in its dry state. If the plants are kept free from weeds and grass, the crop will last seven to ten years without being much the worse; but if choked with weeds it will go off very much. On this account, it should be annually gone over. It is rather weak the first year, much stronger the second, but in perfection the third.

SAINTFOIN

Is another useful crop, somewhat less profitable, but still very useful. It makes into hay better than lucerne, that is, it does not damage so soon, nor is it of the slightest consequence at what period of its growth it is cut, before it flowers, while in bloom, after bloom, and when the seed is ripe; all these kinds of crop answer well when it is desirable to give a piece of ground a change or rest, and are invaluable where there are cattle and live stock. It can only be mown twice a year, but gives a heavy crop in good seasons. It is frequently sown with oats, of which about two-thirds of the usual quantity are used. The saintfoin is mixed with the oats and sown in March, and harrowed in. The oats should be cut close to the ground, no cattle should be turned in, and the next season the first crop of saintfoin is cut; the crop, however, is not so strong as it comes the third season. For sheep to eat green, it should be cut in bloom; for oxen and cows, after the bloom; but for horses, it may stand till the pods are full; and to feed poultry, it should not be cut till the seeds are ripe. When the seed is to be saved, it should be mowed before the dew is off, otherwise much seed would be wasted. Like most other plants, it thrives best in good soil, but will grow on very moderate land; the only exception is wet, marshy ground. Like lucerne, it will live eight or nine years if not too much crowded. When ploughed up again, the land will be in good order for wheat or rye.

Clover.

One of the sweetest and best of green crops, and the most generally useful as hay. It is sown with advantage on pastures, mixed with grain, to be left till the harvest is over; and, if sown by itself, hay may be made of it the second year. It is very nourishing whether given green or dry; but is invaluable as winter food in its dry state whether cut into chaff, which is the best way of giving it, or in bulk. In making clover hay, a good season is absolutely necessary; if it be wetted after it is cut down the quality is deteriorated. In general it will bear three mowings, and on moderately good land the crops are heavy in good seasons. It is not, however, like lucerne and saintfoin; it is not to stay long on the land; three, or at most four, years will be long enough, and the third year it will generally be better than the fourth. When a pasture is newly made, clover should be mixed with the grass seeds; as the clover will die off as the grass thickens. Clover grows stronger in proportion to the room it has to grow in; and if sown in drills the produce will be finer, although whoever has to buy will prefer that which does not grow strong. A load of clover, from poor land, is worth more than a load off strong, rich soil; but the grower finds the loss in a diminished crop.

There are many other plants which serve as food for cattle, such as the common gorse, or furze, or whins, so common on our waste lands, but which, being excellent food when bruised, is often sown to be gathered green; and as it is grown more rapidly on well-prepared land, it is neither so hard nor so dry as that taken from the waste; but bruising is resorted to by way of preparing it for the animals. Then we have other crops intended for dyers, such as woad, madder, wold, saffron, all of which require good rich ground, and good cleaning as they advance; but these are generally grown for people instead of cultivated on speculation; and most of these dictate to small growers how they shall be grown, in the same way as seed-merchants will find them in seed, and contract to give a particular price for all that can be produced.

Harvest and Haymaking.

The principal thing to attend to, as harvest-time approaches, is to secure plenty of hands. Help your neighbours with their work, that you may secure yourself their aid in return; for nothing can be worse than to occupy weeks in doing what ought to be done in days, when once begun. Whether hay or grain harvest, we should remember the advice, "Make hay while the sun shines"—it applies to everything dependent on the weather. In corn harvesting, many delay too long. When the stem dries under the ear, the grain derives no benefit from the root; but too many wait until the grain is dry, as well as ripe; and the consequence is, that a large quantity is lost before it reaches the stack or the barn. It is almost better to cut it too green, than too dry; for the loss in the quality is not half so serious as the loss in the bulk, when the grain shakes out of the husks. It is needless to say, that when you do set about it, not an hour should be lost of a fine day. As to whether you cut with a sickle, or mow with a scythe, is of small importance; whichever you can do best and quickest, should decide the point. The corn should be bound in sheaves, and placed rather sloping, head to head; and we have seen, in some counties, about five placed with the heads close, and a sheaf wrong way upwards (that is to say, ears downwards), so opened as to cover all the others. In the event of rain, none of the ears get wetted; for those which were exposed, and which covered the upright sheaves, threw the water off. If the weather prove fine, it should be carried the next day to the barn or the rick, or under cover. Small farmers carry the sheaves to the barn, and thresh it out during the winter; but the threshing-machine, which is so rapid in its movements, supersedes a man's hand-labour in many places: still, the machine is not for "the million"—the expense even of moving it, if one were hired, would be too great for any small quantity; and hand-threshing occupies the days when the weather prevents out-of-door work.

If we turn to the subject of hay-making, there is as much care required as in corn-harvest. Many a field of hay has been spoiled from not being cut early enough; and the season is too often unfavourable. All ought to be in readiness as soon as the grass is forward enough, and then no time should be lost. It is of no use to let the time come, and then look out for help—make sure of that beforehand; and when you do begin, be in earnest: cut all down in one day, if you can; and do not let it lay still till it is in the rick. It cannot be turned too well nor too often, and contrive the third day to have it in cock. It is better to risk its spoiling on the ground, than to heat in the rick; but a little care will prevent either, unless the weather be very unfavourable indeed. Build the rick with a hole or chimney up the middle, in case of heating, or rather to prevent heating; and as soon as it is safe, have it thatched.

GRASS LANDS GENERALLY

THESE consist of meadows which lay low and moist in the winter months, which are too wet, perhaps, to turn cattle into, but which yield fine crops of hay in dry summers—and of upland pastures, which are various, from poor to rich. All wastes which yield grass at all, are called *pastures;* but there are many which would starve a donkey—grass may be found, and in wet seasons the space will look green: others, where the soil is rich and deep, are valuable. If such pastures can be watered, they are enviable spots; but uplands are greatly dependent for their fertility on the season. Moors, commons, and waste lands are mostly poor. Our forefathers contrived to enclose the best; but a good deal may be done towards reclaiming a waste—generally, paring off the surface, and burning it, is the first step; next, ploughing all the ashes in, with any sort of soil or manure we have; and a crop of oats may be tried; if it be but poor, it is a beginning. The clearings of ditches, the soil out of drains, and muck of any and every kind, will help it; yet there is some soil so poor, that it would cost more to make it useful, than the land would be worth after it was done: but natural pastures, be they what they may, if there be enough to feed sheep, will always pay, because the sheep improve it every month they are upon it. A good meadow should always be made to grow hay; but upland pastures will not generally pay so well any way, as when fed off.

This brings us to the consideration of the stock; and we must presume that the reader has pigs and poultry, horses, cows, sheep, and the usual appendages to a small farm: or if he has only one description, instead of all, he will like to know how he can most profitably feed it. Much, however, must depend on circumstances. We can only treat of each of these in a general way, looking more to economy than style, and to the good health and usefulness of the stock, rather than a wasteful expenditure in the construction of their housing.

The Pig.

As the sty is the first thing to be provided, let this be built of any rough materials, say six feet square, with a raised floor, sloping in a trifling degree towards the corner next the opening. The roof must be of tiles or slates: the whole, sides and front, weather-tight. The opening should be about two feet wide, but no door. Outside this, rail a space off as large as you can afford (the more room a pig has, the better he thrives): to this outer place there must be a door, to enter, for the purpose of cleaning, as well as for the accommodation of the tenants. Let the outer space be paved or concreted in a solid, substantial manner. If twenty sties were required, this should be something like the plan of all; the only improvement that could be made, would be in the size, which might be increased. However, we are providing for only one sow, or a couple of store pigs. The outer place should slope a little towards the door, for the facility of cleaning. A substantial vessel to hold wash, and occasionally water, should be one piece of furniture, and a trough for the food another; and, with a good litter of straw inside, the pig-house may be said to be furnished.

Of the various breeds and cross-breeds of pigs, it would be useless to say much; they have been crossed in every direction, till every feeder calls his pigs a breed of his own; and we are as wise, after looking at fifty alleged sorts, as if we had seen only the last half dozen. In one little treatise on the pig, there are nearly thirty breeds and crosses mentioned; and if every cross were recognised, there would be as many to record as there are feeders. In selecting a pig, look for a good square body and short legs and head, and there will not be much amiss; for unless the pedigrees are regularly handed down like those of horses, and grunters are named like racers, none will know Tom Nokes' improved Essex, from Jem Styles' improved Sussex; and so of the rest. A well-formed pig cannot be a bad sort: judge for yourself, therefore, and select one that can be recommended by a vendor whom you know. If you are going to keep them for killing, buy two—the sty is large enough to accommodate them, unless they fight. Once place them in possession of their mansion, and a few good feeds will soon reconcile them to their situation. As pigs are not over-dainty in their food, all you have to take care of is, that, however coarse, it is wholesome. Save for them the water that anything, even greens, is boiled in; but the food should not be given sloppy, whether it be meal of any kind, or middlings, bran, or otherwise. Let what moisture you put to it be scalding-hot, and do not make it thin; let it be of the consistence of very thick hasty-pudding, such as the spoon will almost stand upright in. Let the animal go to his wash or water-trough for his drink. Grains from home-brewing are good for them; but the ordinary brewers' grains have little nourishment.

If pigs can have a run on a common, give them a good meal the first thing in the morning, and when they come home at night; they will forage during the day, and thereby amuse, if they do not satisfy, themselves. They will never require to be fetched home, for the comfortable meal and a good bed will do all that. While they are thus treated they will grow, but not fatten much: when you resolve to do this, keep them in and give them the mid-day meal. We are advocates for changes of food, that is, changes from peas to barley-meal or oat-meal, and *vice versa*; but when fattening, all their food should be substantial; wheat-meal is excellent, that is, with all the bran, husk, etc., in it, just as it leaves the mill. Potatoes boiled are good; but not more than one meal a day should be given, when getting ready for the knife. In fact, some who are in straitened circumstances make the pig live on the waste of the garden, and the run of a common, or road-side, and give them but one solid meal in the twenty-four hours, and that is on their return in the evening. Where there is a good farm-yard and plenty of dung, and all the vegetable waste is thrown, pigs will thrive greatly—what with the unthreshed corn left in the straw, and the numerous pickings among all kind of collected waste, they want but little other feeding; water they require or drink from the wash-tub, and little else.

The most profitable mode of keeping a pig is to grow your own provender. The ordinary vegetable waste of the garden will do a good deal towards it. The chat or small potatoes from your stock cannot be better applied. The peas haulm, after gathering the crop, is a great favourite; and a feed of good barley-meal, pollard middlings, or other grain or meal, once a day, besides the garden supply, may do. As, however, the pig advances, there may be two feeds a day of the substantial food, and what he likes to take of the vegetables. One of these feeds may be of peas, when you come to the last four or five weeks of his life, and change the middlings to barley or oat-meal. The run of the garden vegetables, as a sort of mid-day meal (if he has not got a run in other fields), peas the first thing in the morning, and as much meal as he will take in the evening, will bring on a pig rapidly. The last fortnight very little vegetable is to be given; but we must increase the peas to as many as he will eat, and the same with the meal; yet it is a good plan to change the barley-meal to oat-meal, or any other food of a similar nature. Care should be taken upon two or three essential points; for instance, all the vegetable food will be better for boiling, and giving it warm, especially in the winter months. The middlings, meal, or pollard, should be scalded, and not made thin. The wash should be given in another trough, and not mixed with his more substantial food. His sty should be regularly cleaned out; his bed well supplied with straw, and be made warm and comfortable; he should have as much as he can eat at any meal, but no more, and whatever he leaves should be removed, and the trough cleaned. His meal times should be morning, noon, and evening; but he may always be supplied with vegetables, because he will eat no more than he likes, and they should be put into his wash-trough, after having been boiled or stewed. Potatoes stewed or boiled do a pig infinitely more good than raw ones, and are next in point of nutriment to the different kinds of meal.

BREEDING.

THE choice of the sow is an important point, but it requires no great experience to judge. We purposely abstain from mentioning any particular breed. Look well for short small legs, broad chest, and generally a square build; and Richardson, in his Treatise on the Pig, recommends as a model for the sow—

"A small lively head, a broad and deep chest, round ribs, capacious barrel, a haunch falling almost to the hough, deep and broad loins, ample hips, and considerable length of body, in proportion to its height, nor must the broad flat table-like back, the broad thick shoulders and hams be forgotten. The flesh should rise full and round behind the ears. One qualification should ever be kept in view," he observes, "and perhaps should be the first point to which the attention should be directed, viz., smallness of bone in proportion to the flesh, and fineness of the best parts, with lightness of offal."

All this, however, is mere detail of the points which constitute what we have already described in small short legs, broad chest, and square build. We have, however, to be as particular in the choice of her mate, whether you choose him as a temporary or permanent sire. The nearer he is like the sow the better; but he need not be so large. Buy your sow at a year old, and do not choose her mate more than two years of age, if you are to keep him, if not, a year or two is no object. When the sow is not in pig, keep her rather poor than otherwise; but afterwards give her good substantial feeding, but do not make the change suddenly, gradually increase it till she can eat all you give, but do not let her have enough to leave any, this you will easily ascertain by three or four trials. A sow will go about sixteen weeks, but is not so certain as other animals. There have been instances, it is said, of their varying three weeks, and even more. Few animals vary more in the number, from three to thirteen in a litter, but it is only her first that will be so few; the average is perhaps six to thirteen. When they are expected, the bed must be made comfortable, and be large enough. She must, as she approaches the period, be well fed; but when she arrives at about the last week the food must be lessened. And when the little family appears, the mother must have light food and milk especially, but meal must be avoided, it will be found too heating. She must have her bed of short straw, and not much of it. The young pigs should be generally fed before evening, and at first, milk, with the chill taken off, will be the most tempting; then in a day or two, thick, and with a little scalded meal of wheat, barley, or oats.

The pigs intended for early death as sucking pigs want no attention till killing time; but the farrier must be called on to those intended for porkers, in fact, to all but any favourite sow or boar to be kept for breeding. The others must be operated upon as soon after three weeks of age as convenient, although it might be done at almost any age without danger. The porkers may be treated as we have directed already. The sow may be turned into the pig-yard an hour or two in the day with her mate even before the pigs are weaned, but the stores and porkers, as well as any sow or boar pig intended to breed from, should be rung before they are too old. During the time the sow is suckling the pigs, she should have substantial food once daily, and boiled or steamed turnips, carrots, parsnips, or potatoes at other times; and, as we have before observed, she may, even while suckling, be turned out now and then into the pig-yard with her mate, for it will be none the worse for the young; nor must it be forgotten that, among the food of pigs, old and young, boiled or steamed lucerne, clover, or even common hay, are amongst the most nourishing. However, as thousands keep pigs who have not these hings at hand, the only thing we shall add here is, that washing with soap and water once a week will keep them in finer order and make the food do them much more service than if left to themselves; and that there is no reason why a pig should be more dirty than a yard-dog or a horse. If these matters are attended to as much as circumstances will permit, the keeper will not fail to be successful.

THE POULTRY-YARD.

NEXT in importance to pigs for the small farmer, we must place poultry, which, however, are far from profitable if all the food has to be purchased; but if they have a good range, where they can peck among dung and scratch for worms, and where the waste of the garden is thrown for them as well as the pigs, they prove very advantageous. The principal objects to secure are, a house free from draughts and naturally warm, great cleanliness, a good roosting-place, pure water, regular feeding, comfortable nests of easy access, a young cock—say twelve months, in good health,—and a dozen hens, or less, as the case may be. Poultry-keeping has become a fancy, and a sort of mania has prevailed for the Cochin-China breed. Their merits have been exaggerated until they commanded monstrous prices; and it scarcely began to subside, until the coarseness of their flesh on table put a check upon the inclination to depend on them. There is no doubt of their superiority in laying, although their eggs are small, but they are fully as coarse for eating as they are in appearance, and, except as curiosities, are inferior to the Dorking or the Spanish. This, however, is matter of fancy; some people would rather have twelve eggs to a pound than eight; but, numerically beating others in the number of their eggs, they are better for breeders if they can make the poultry fetch a price at market. The Cochin-China fowls were first introduced for Her Majesty and Prince Albert, and, when imported by others, bore large prices; we have heard of as much as fifty guineas being paid for a cock and hen. Of course, while they bear any higher price than our better sorts of ordinary domestic fowls, people will continue to breed them for sale, and they will not, to any extent, be eaten; when however, they are tried at the market, and people buy once, they will only purchase afterwards for cheapness, as they buy coarse joints. The advocates of the Cochin-China fowls say, that they are fine eating if killed while very young, three months hatched, or younger, and that they are then as large as the full-grown chickens of ordinary kinds. We will not dispute this; for those we have partaken of have been six months hatched; and we must say one word in their favour, as we happen to love the garden. They will not get over a paling that they can look over; a two-foot fence is a better protection against them than an eight-foot paling against the ordinary kind, so that there is no need of clipping wings, and, we were going to say, disfiguring them, but it is no easy matter to disfigure a bird so ugly. As a general remark, we may observe, that the more extensive the range that can be allowed to poultry, the more they will thrive, and the less actual feeding they will require; and besides that, the more healthy they will keep; whereas fowls that are much confined cannot be healthy for any length of time. Still they are injurious in the garden, for they will scratch up the ground after worms to an extent that is almost incredible, and will rout up holes deep enough to half bury themselves, in which they will bask in the sun for hours. The poultry-house should have a row of boxes or nests, about four feet from the ground, for the ordinary fowls, and two bars or poles along the front of them, eighteen inches apart, the lower one further out than the upper one, which should be not more than a foot below the bottom of the nests or boxes, and there should be a shelf in front even with the bottom, so that the hens should easily jump from the ground to the bottom pole, from that to the top, and from the top to the shelf in front of the nest. The nest and shelf should occupy eighteen inches. The top pole should be two feet from the wall, and the lower one three feet. If the wings are not clipped, fowls can fly to any reasonable height for roosting or laying, but there is no good reason why they should have the trouble.

The Cochin-Chinas should have their nests nearer the ground. A roost fixed eighteen inches from the floor is high enough, and the nest need not be above a foot higher. A shelf two feet wide will hold a row of nests, which mav be boxes or round baskets, or partitions like corn-bins; and the perch may be one foot lower, and a foot off. The floor may be littered down as if for horses, and many of the fowls will not take the trouble to roost at all. Mr. Richardson says, "As table-fowls, the Cochins are considered a great luxury, and as such may be turned to a profitable account. It is their size and weight at so young an age, that renders them so desirable at table; and they cost but little for food in the short space of time required for feeding." How young they must be to be a luxury, we do not know; but at six months' old they are anything but a luxury. There is no denying that they lay pretty nearly an egg a day, and that they will begin laying again when their chicks are five or six weeks old; moreover, that they will sometimes lay five-and-thirty eggs before they want to sit, and can cover sixteen or eighteen eggs. From a report of the produce of 35 hens of Mr. Punchard's poultry-yard at Haverill, announced in the newspapers of the day, each averaged to have laid 155 eggs in a year—or the whole, 5445; and, with the help of a few sitters, produced 500 chickens: so that there can be no question but that they are prolific; and we shall very soon learn whether, after the fancy shall have gone by, they are valued for their table qualities, of which we have some doubt. One hen has been known to lay 95 eggs in 96 days.

The Spanish fowl is a noble bird, not surpassed by any for the table. The hens are good layers; but it is necessary to be sure that you have the true, pure birds; for there are many crosses, which are put off for Spanish; and it is impossible to be sure, unless you deal with a respectable breeder. They are excellent feeders, and withal profitable as well as handsome, for their eggs are of large size.

The Polands are handsome birds. Some of these are black, with white top-knots; some are beautifully speckled; others are white, with black top-knots. If these fowls are kept moderately warm, they will lay pretty nearly all through the winter.

The Dorkings are general favourites: the majority are speckled black and white. Their eggs are a good average size; their constitution good. They feed well, and come in excellent order to table.

The Game fowls are smaller than any we have mentioned: their plumage is beautiful; but their disposition to quarrel and fight is seen before a brood has arrived at any size; and this often ends in the death of some of them. They are variously named, according to their colours; and the old hens are the best to sit upon game eggs. They are more difficult to rear than any other, and should never be chosen for profit. The chicks have to be fed with dainties—boiled eggs, crumbs of bread, new milk, and the like; and they greedily devour insects.

The Columbian fowls lay the largest eggs; but they are by no means common.

The Malay fowl is the largest bird of all, and we think worthless, though some of the crosses are worth attention. The true Malay is coarse and rank.

The Barn-door fowl is a most comprehensive class. Every cross, every bird that is not of a pure breed, is called a barn-door fowl. In fact, they are just such a mixture as would be the result of keeping half-a-dozen sorts together, and letting them mix indiscriminately; consequently, they are not to be described.

Fowls in general feed on all kinds of grain, soaked or dry; the waste of the house—bits of meat, bread, potatoes, boiled rice, worms, insects, and raw vegetables. If you could give them a garden to roam in, and plant it with cabbage and lettuce, and sow grasses and vetches, they would like it better, and thrive more in it than they would in any other way; or if they could have the run of a paddock, they would find enough to feed on all day, and only require barley, or oats, or other grain, morning and evening. Their house should be warm, and they should be shut in at night. If you have a regular dung-yard, where waste vegetables, straw, stable-manure, and all kinds of refuse, are thrown, they cannot but do well.

Fowls should not be too highly fed, unless they are fattening; and then they must be separated from the layers. The cocks, also, should be taken care of; for they will frequently go without enough food, while the hens eat all. You must also watch them, to see that they agree; for it will happen, sometimes, that an unfortunate hen will be driven away from the food by the others; in such cases she must be removed, and fattened for the table.

Take care that powdered oyster-shells are placed in their run, as well as sand or gravel; and if there be any lack of insects, give them raw meat to peck at now and then—a lump is the best; or if cut up, it must be very small, or they will choke themselves. Cooked potatoes are excellent. In Richardson's Rural Hand-Book, the author recommends, as an especial treat, a raw bullock's liver, and feeding twice a-day at the rate of "a handful of grain to every three birds." This latter is rather indefinite—a "handful" may mean any thing; a quarter of a pint would be better understood. Above all things, remember that they have plenty of clean water.

When a hen wants to sit, put as many eggs into her nest as she can well cover, and no more. Let her be away from disturbance of any kind. Place food and water where she can get at them. When the chicks appear, they should be kept warm, and fed with oatmeal groats boiled soft, or thick gruel, for two or three days; but if the weather be warm, the mother will be the best nurse. There is something cruel in putting the hen under a coop that will allow the chickens to wander, while she is a prisoner.

THE TURKEY.

THERE is no poultry more profitable than the turkey. On many farms they have nothing but a shed, and for the most part feed themselves. They must have a run, and will feed on snails, slugs, worms, and other creeping things — grass, vegetables, grain, anything they can meet with. Some people who keep them on farms, let them run and roost where they like, and never feed them; but even where they have a good run, they should be fed of an afternoon from the first, and they will always be at home to roost. They like trees better than any made roosting-place, and open air better than under cover, if the weather is fine. Still there should be a shed provided, and proper roosting-places, as well as nests, which should be in a very retired spot; and a chalk egg should be placed in each. As they lay, remove the eggs, and keep them dry till wanted for sitting. The cock must be watched, because he is apt to disturb the hens, and even break the eggs; and if there is the least disposition to this, let him be separated, so that he cannot get to the young ones, for he is often spiteful even to the turkey poults. You will readily perceive when the hen turkey wants to sit, as at such times she will scarcely quit the nest. You must then place as many eggs in the nest as she can well cover; and if you can separate all the others from her, so much the better. On this account, it is well not to have the nests close together, but in different places, especially the corners, where it is easy to screen the hen with hurdles or mats. Let food and water be near her, and let none approach but the regular attendant. They sit four weeks—a day or two more, or perhaps less. Chopped boiled eggs and bread, a little moistened, may be given to the chicks in a few hours after they are hatched; taking care, however, that the mother does not get the best share, for they would stand a poor chance against the large birds. It is well to keep them confined a little, at first, with the mother. Many different ways of feeding the young ones are recommended: any soft food will do the first month; they may then roam after it; and nothing is better than pure water, though some use milk. A little Cayenne pepper in their food is good; and many boil nettles to give with their other victuals. The young birds get past all danger after two months, just about that period being rather trying; they are as bad as children when cutting teeth.

When the poults are to be fatted, give them boiled greens or herbs of any kind, with meal of any sort, or boiled potatoes; and never mix more than they will eat at the time. The better they are fed, the more money they will bring; but if they are to be kept to increase the stock of layers, let them shift for themselves, especially if they have a run near banks and ditches; for there is scarcely a living thing which they will not eat, of a size they can take in. In fattening turkeys for market, they mix up meal into a sort of paste, and when the turkeys have eaten as much as they care for, they are stuffed. The victuals are thrust into their maws, in balls as it were, until their crop will hold no more; and this operation is performed twice a day. Hence the saying of a gourmand, after eating his fill, "as full as a stuffed turkey."

THE GOOSE.

GEESE are birds of the common, the road-side, and the meadow, as well as the water. They want room to swim like a swan, and graze like a cow; and the greater portion of their lives they find all the food they require. With the great variety of geese we have little concern; the only two among our domestic herds are the white and the grey; but there will be small variations in colour, and those who take much pains will keep only the half-coloured birds, the others they condemn for the spit. Water in a farm-yard is desirable, but geese will travel a long way for it; and if they cannot get a swim at all they will nevertheless thrive. They require but little more accommodation than turkeys. One gander is sufficient for half-a-dozen geese; many say, one gander to four, if the object is breeding. If the goose has laid sixteen or eighteen eggs, you may look for her wanting to sit. About thirteen or fifteen eggs should be then placed under her. The nest should be on the ground; a shallow box or basket, lined with straw and hay, make the best; and the only care they require is warm housing, which promotes early laying and consequently early broods, and these early birds are sure to do well. If they can be turned into the stubble fields, they will cost little or nothing. The only food the goose requires, if confined, is grain of almost any kind; but they want but little if allowed to roam. It is good policy to have a shallow pool in the yard, if there be no other convenience, for ducks want it more than geese; and it is a security against neglect of watering, for when provided in mere vessels they must be attended to daily, and if neglected they must suffer; but we are advocates for a good run, in which they can reach regular ponds or streams. The goose wants but little attention when sitting, and when, in about four weeks, the goslings begin to come forth, any that are delayed may be examined, because occasionally the young fowl is barely strong enough to break the egg sufficiently, when you may give assistance; when all are hatched, let them go into the sun if the weather be fine, but they will require no food that day. After this, give soft food, boiled vegetables, bread and milk, bran, potatoes, and meal, with little more than the chill off. They will, however, be better housed, if there be a north or east wind, or rain; and the brood must be deprived of water for the first two or three days. If there is nothing particular to hurt in the kitchen garden, a run there will do them good; if not, the farm-yard must do, and the waste vegetable should be always thrown there. When fattening, give them every evening a good feed of boiled turnips, or potatoes mixed with meal, as much as they will eat. Some will stuff geese as they do turkeys, but except increasing the fat nothing is gained by it. The flesh of the goose, fed as we have directed, is far better than that of those which are stuffed. The house in which they rest for the night, and lay, should be free from draughts, and so constructed as to be easily shut off from the yard.

The Duck.

It is not impossible to keep ducks without a pond, or a tank, or some means of swimming, because they are so kept; but they are not so healthy, nor so profitable; for, as with geese, if there be none, and no means of getting to any, a shallow tank should be made. The food, too, may be similar to that for geese; but if allowed to range the kitchen-garden, they will not only feed well, but destroy the gardeners' enemies by wholesale, clearing away slugs, worms, etc., and do little or no mischief, except at certain times, when a young crop would unquestionably suffer; but this can always be provided against, by shutting them out for a few days. The duck-house should assimilate to that for geese, with nests close to the ground, and there should be several, more or less retired, in different parts of the place. Ducks require some watching when laying: they will sometimes wander and lay their eggs in a nest of their own choosing, yet always in safety, but they should all but one be removed, and even that may be superseded by a chalk model. It is sometimes wise to disturb it as little as possible, and merely remove them daily, or as often as they are laid; but ducks will rarely go abroad to lay if they have a choice of nests in the house. Ducks lay many eggs, sixty or seventy sometimes before wanting to sit, they are therefore profitable, more especially as, for domestic purposes, one duck egg is worth two hen eggs. The best mode of breeding ducks is to set the eggs under a good hen, and when hatched confine them for two or three days that they may not get to the water. Ducks are not good mothers, for they will take the brood as soon as hatched into the mud and water. Their first food should be soft, and lukewarm; some give boiled eggs and boiled nettles, others boiled barley; but little comes amiss to them, and they are excellent gardeners; a brood of young ducks will hurt nothing, and will rapidly thrive upon the living marauders, the slugs, wood-lice, caterpillars, and worms. The Aylesbury white duck is the best to breed, because they fetch the best price at market. Ducks will fatten rapidly with one good feed in the afternooon of meal or boiled grain and the run of the place; but the last week or ten days the food must be choice, for the flavour of the flesh is affected injuriously by coarse or indiscriminate feeding. They are better without insect or reptile food than with it; and if they eat fish their flesh becomes rank and unpleasant.

CAPONS.

WE might lengthen our work by giving a chapter on this cruel practice; but those who want to rear capons should procure the assistance of practical operators, who will remove those portions which are necessary for the breeding, and fit the bird for eating, drinking, sleeping, growing, and fattening; they then attain a large size, and, in fact, may be fed up to anything; still, except for those who lay themselves out for producing capons in a wholesale way, it cannot be profitable, and for those who do, the assistance of an adept at the operation is necessary, and will pay.

THE DISEASES OF FOWLS

ARE numerous, but with care they are easily avoided. Confinement produces the pip; and damp will bring cramp; great changes of temperature will give colds and inflammation; in short, poultry is, like other animals, liable to various diseases if exposed to them, but comfortable, well-ventilated houses, free from draughts, a good yard, with a portion high, dry, and covered, and easy access to their domiciles, great cleanliness, and wholesome water and food, are so many insurances against these evils; and if there should be any sickness of consequence prevailing, you may attribute it to bad constitutions; and the best remedy is to get rid of the lot, and change your breeders. If any one receives a hurt, kill and eat it; for, unless it be exceedingly valuable, it is not worth while to save it. The most elaborate writers on the diseases of poultry tell you plainly, that this disorder is occasioned by damp, that from overfeeding and want of experience, a third from cold, and so on, attributing everything to something that has no business to happen.

PIGEONS.

FARMERS have no business with fancy birds at two guineas a pair; but the ordinary pigeon, with a proper dove-cot in the middle of the yard, will find every year a certain number fit for market, and no difficulty in feeding them. Nothing requires less care; and if there be a scantiness of picking in the yard, let there be a shelf, on which their beans, which are the only food given to them, may be placed out of the reach of the other poultry.

THE STABLE AND COW-HOUSE.

ONE of the most important points to attend to in the construction of a stable, is proper ventilation, a thing so little regarded in old-fashioned buildings, that, were it not for broken windows or holes in the roof, there would be nothing like a pure atmosphere. It is requisite that air should be admitted near the floor, and let out near the top, as the heated breath constantly rises. In stables with lofts, the outlet for the foul air should be in the loft, as it will go up from the stable through the rack if it be one fed from above, and if not, through the way the loft is entered. Horses thrive most on bruised corn, and many give nothing but chaff instead of hay. In other words, they cut or bruise all the horses' food. Some horses eat and usually require more than others, and they all want more corn when at hard work than when unemployed or partly so. The allowance of food must be regulated according to the constitution and the habits of the animal, and though, in the spring months, green meat is of service for small concerns, where there is but one kept for work, and that work necessarily irregular, the variation of the food must be attended to for economy. Where there is a turn-out for a horse and tolerable feed, a feed of corn in the evening, when brought into the stable, is sufficient when the animal is lightly worked or perhaps is not used at all for days together. Some horses, kept for very light work, scarcely want any dry food, but may be turned out for days together in favourable weather and in the warm season; but when required for a day's hard labour, should be taken up the day before and be well fed. Carrots are favourite food, and the animals do well on them; Swedes are relished by some; but, whatever be the food, it should be the best of its kind. Some horses will almost starve rather than eat musty oats or hay, so that we cannot be too particular in this respect. Grooming, too, is as essential as food. If a horse be neglected and kept dirty, he cannot thrive even on good victuals. We are no advocates for worrying a fatigued horse with an hour or two of rubbing to get him dry. It is essential to wash their legs, and clean, and perhaps stop their feet; but he would much rather lie down or stand still and rest himself after this than be marched about to cool him, or be rubbed dry. Leave the rest of his grooming till he has got over his fatigue a little. Always see that the harness of a working horse fits, that whatever he works in is adapted to his height, the collar easy, and the pad sits well to his back. One half the horses are made to do twice the work by inattention to these matters. See that he is nowhere chafed, that his shoes are in good order, and all things adapted to render the work as light and easy as it can be made. Always take a nose-bag out with you, that, if you have to wait anywhere, he may be amused, and, if the weather be cold, take an old sack to throw over his loins. There is a good deal more in these little attentions than many people are aware of. The stable, though well ventilated, should be free from draughts and great changes of temperature, for the horse takes cold as readily as we do, and often suffers a good deal before it is known what is the matter with him. A small farm will supply the food of a horse, but it is frequently more to our advantage to buy one sort of victuals and sell our own stock of something else. Rye, lucerne, clover, and Italian rye-grass, are excellent in their way for green meat, but some animals will eat cabbage, beet-root, and even potatoes, cooked or raw; still they must have corn and hay or chaff, occasionally a few beans, and nothing will be more plainly indicated than the treatment by the horse's condition. If he works well, feeds well, and looks well, you may be sure the treatment agrees with him; if he does not, you must make a change, and he should always have a good thick bed of straw for the night.

THE COW-HOUSE.

THE cow-house must be warm and comfortable, no broken windows to let in a draught; but air is wanted as in the stable. The food of the cow is very important, as it affects both the quantity and quality of the milk. Much has been said and written upon this subject. If there be a good pasture, thousands of people merely turn out the animals after milking them in the morning and fetch them home to milk at night; but it has been found that home-fed cows, whose food can be regulated, and changed, and supplied with great exactness, can be made to produce more and better milk than when dependent wholly on grass. "The Swedish turnip and the cabbage give a richer milk, the white globe turnip the larger quantity." It has also been found that in both cases the milk is increased by grains, and the green tops of the turnip as well as the bulbs. When fed on grains and grass the cow will yield a larger quantity; of green meat, tares, clover, and cabbage, beans, peas, &c., promote the production of cheese; while oil-cake and seeds that contain oily matter favour the yield of butter; and if oil-cake be new and sweet it does not in the least deteriorate the flavour; indeed, we are told that if given in moderate quantity it rather increases the flavour and pleasantness of the butter. In some dairies part of the cows are kept for butter and part for cheese. In this case it is a very common thing to give the buttermilk of the one half to the other cows, and its effect is to increase the cheese-making qualities of their milk. In and near London the food of cows depends a good deal on the state of vegetation; brewers' grains are used in large quantities, cabbages, mangold-wurzel, Swedish and other turnips, oil-cake, mill dust (which makes them drink hard and milk well), carrots, grass, tares, green clover, as well as hay and clover.

It need hardly be mentioned that sufficient food and water must be given; the cow will not eat more than will do her good. The milk will be richer, too, on home or still feeding, while those in pasture will give milk that will produce more cheese. The warmth and cleanliness of the house will greatly promote health and good flavour of the milk. When milk is set in pans the cream will rise to the top in more or less time according to the temperature of the air in the apartment. At 50°, in 36 hours; in 55°, 24 hours; in 68°, 20 hours; and 77°, 12 hours; but just above freezing point, we are told, it may be kept three weeks without throwing up any quantity. Some use warm water to throw up the cream quicker, others warm the dish. The best cream, carefully skimmed, will yield about one-fourth of its weight of butter, and we have given, in a notice of some wonderfully improved churns, some idea how easily this operation is performed. The temperature of the cream when churned should not be higher than 53° to 65°. It often, therefore, becomes necessary to cool the room, or choose a cool room to churn in; on the other hand, in winter, you must add hot water to bring the cream up to the proper temperature. In the ordinary churns, it takes from an hour to an hour and a half to make butter; but on turning back to our chapter on farming implements, it will be seen that it can be done in a fourth of the time; and some claim for their churns the capacity to make and clean the butter in less time than that; but these must be seen.

When the cow begins to lessen her quantity of milk, and wants her mate, it becomes a question whether she shall be supplied at home and be allowed to calve again, or be sold to make room for another in full milk: this must be decided by the circumstances of the farmer. If the cow is valuable on account of possessing better than ordinary qualities, and there is no urgent necessity for parting with her, let her be taken to her mate, and be reconciled to a lessened supply of milk, and a little extra care, until she brings forth another calf, which may be got rid of in a few weeks, or must be, in due time, weaned; but, unless there is every convenience and a great affection for the animal, it may easily cost more than it will be worth. If milked, and butter or milk and cheese be the objects, sell the calf as soon as it is ready for the knife, and set the dairy going again. The purchase of a horse or cow is at best a lottery; and if we get something better than usual, it is a prize. Where there is a permanent pasture and the cow is of a good breed, and, besides this, she has been mated with a fine young bull, it may pay to rear the animal, but, before determining on this, it would be as well to take advice. The butcher's money for the calf is sure, and no after-accident can affect us, but, in bringing up a calf there are many risks. For the cow, a small, well-managed farm will produce all that is absolutely necessary, for some portion of it might always give wurzel and Swedes, and other portions of green meat, even if there be no regular meadows for hay, which, in winter time, is a very necessary item in the food of cows.

OXEN.

OXEN are in some cases used instead of horses: they are steady on the road, useful at plough, very tractable, and only cost about two-thirds the keep of a horse. They should be purchased from three to four years old, worked till they are ten, and then fattened and marketed; for a ten or eleven year old ox will fatten as readily as one much younger, and the meat be as good. The ox may be turned out to feed or have part hay, but wants no oats.

SHEEP.

THE principal use of sheep to the farmer is to eat off certain crops and manure his land. For this purpose, he will, at the proper season, when his crops are ready, or his pastures fit for their reception, buy lean stock. His great object then is to put meat on their bones as rapidly as he can. He may bundle them in his turnip-field, and feed off the whole space in time, but if he gives the sheep oilcake occasionally, it will not spoil their relish for the turnips, while it will greatly enrich the manure and increase their flesh. A sheep, full grown, will require, says Johnson, three and a half per cent. of his own weight of dry hay. If he is on a pasture he helps himself; if among turnips nobody weighs them out to him, but the hurdled space generally apportions a sufficiency. The breeding of sheep can never pay upon a small scale, nor unless there is abundance of pasture and a sufficient number to pay for the attendance of a shepherd. The only use of this animal to the farmer of small means and limited occupation is, as we have said, to buy lean and sell fat mutton.

Hints that are Useful.

Be careful to procure good seed; and, whatever animals you keep, bear in mind that a good breed will cost no more to feed than a bad one.

We have, under each head, given a pretty fair estimate of those we have tried, and, for the most part, they are fairly placed according to their merit. It must have occurred to most people that some animals would be dearer at a gift than others at a fair price, for some go to meat with half the cost of food that others require.

This is especially the case with pigs. A good breeding sow is a little fortune to the cottager. Some cows are worth twice as much as others.

We may repeat our advice about spade labour being more productive than the plough; but the digging-fork is better in most cases than the spade. A man can do one-fourth more work with the fork than the spade, and the ground is left in far better condition. It is torn about more.

When you burn troublesome weeds, let the ashes be spread as evenly as possible over a given space, or carried to the muck-heap; but if they are properly charred instead of burned to ashes, they do still more good, and, which is more important, they will disinfect any disagreeable thing in the manure hole.

A great many nostrums are recommended to the farmer as fertilizers; mind what you are about when persuaded to use things you do not understand. Bone-dust, for instance, is a great fertilizer, but, if bones are to be used at all, avoid buying dust; buy bones, and dissolve them in sulphuric acid. Two bushels of bones, their own weight in acid, and eight hundred gallons of water to an acre, applied with a water-cart, is the most profitable way of using bones; but there is no dependence on the bone-dust of commerce, so much of it is adulterated that you cannot know what you buy.

Guano is another article much adulterated, and, therefore, not desirable for the small farmer. A large one can afford to have it tested if he has any doubt. Salt and lime are tolerably well understood, and may always be applied together, and some crops take up an enormous quantity. One hundred-weight of lucerne hay-ashes contains forty-eight pounds of lime, and red clover contains twenty-seven. If, therefore, the land be short of lime, neither of these crops can succeed. For if what a plant really wants to take up be not in the ground, failure of the crop is inevitable. Nevertheless, there is nothing so good to the cottage-farmer as the muck-hole, which may always be benefited by lime or charcoal, or both; because, besides removing all disagreeable smells, they assist, or add greatly to, the fertilizing qualities of the heap.

The dung-yard should be paved in some way, that the wet may not soak into the ground, but run into a cesspool, together with all the moisture from the stables, cow-houses, and piggeries.

If there be no means of paving, let there be four inches or more of any light soil at the bottom, that it may be saturated and cleared away with the dung when the yard is emptied; for the soil thus saturated may be mixed with and form part of the muck itself.

Of draining we may here give some few statistics, but the operation itself is treated of at length at Page 11.

Draining is not done to get rid of surface-water altogether; though it is absolutely necessary in wet soils, it is beneficial in dry ones.

In nine cases of every ten, three feet six inches is a good depth for drains; but as a fall is necessary, however slight, an inch in ten feet is abundant.

In all cases of draining, it is desirable to open them all, to see the effect of the run of water, before the pipes are put down; and the drains in sloping ground should be in the direction of the slope.

A three-foot-six drain will in all cases drain the ground on each side, even in the strongest clay, if the drains are made a pole apart; and where the sub-soil is sandy or gravelly, two poles apart. Two-inch bore is large enough for the drain-tiles at the depth of three feet six inches.

The *improvement of soils* has been fully discussed at Pages 15 and 17, a summary of which is that nothing, animal or vegetable, should be lost, refuse of every description being useful and valuable, and there are means of helping every kind of soil.

Clay soil may be assisted by burning as much as will spread over the ground, to be ploughed in; also by peat and peat-charcoal, by constantly working it and laying on in ridges for frosty weather. It may be always improved by dunging, and by the mixture of anything calculated to open the pores.

Peat, on hungry sandy soil, is improved by dressings of marle, lime, and muck; but the marle or fat loam does more good than anything. Clay is by no means to be despised; it is best laid on in winter, that the frost may penetrate it, when it is, on thawing, easily spread.

A trifle over four yards of lime, or loam, sand, or other close material, will cover five rods of ground an inch thick; from this any thickness we require may be calculated.

When lime is used, it should be laid in heaps all over the space, and slaked on the ground; it then spreads easily, for it is fine as powder.

It should be remembered that good tools save a great deal of time, which many lose by having bad ones, such as spades worn half away, blunt hoes of improper sizes, rakes which have lost a tooth or two, and such like.

Now this is the worst possible policy. A man who would do a first-rate day's work with good tools would be two doing as much with bad ones, and not do it so well. The instant anything is broken or gets out of order have it repaired, and if too much worn to be mended, get a new implement.

At Samuelson's, the Depôt for Boyd's Patent Brush-Mowing Machines for Wet and Dry Weather, Cannon Street West, all tools of any consequence to the small farmer are kept in stock—the steel digging forks, the patent scythes, both the Vulcan and the self-adjusting, churns, pumps, troughs, and mangers, and many other farming apparatus. Burgess and Key's Reaping and Mowing Machines, worked by horse, will have made quite a revolution in corn and hay harvesting.

Cropping the ground is described at Page 30, and one of the principal objects is to attend to a proper rotation, and buy or procure only proper quantities.

Early Peas will take a quart for a hundred feet. In a middling season a pint and a half will suffice, and of the large, for late sowing, a pint is sufficient.

Cabbage, Broccoli, Cauliflower, and all the Cabbage tribe.—An ounce of seed will sow a bed ten feet long and four feet wide.

Broad Beans.—A pint will sow eighty feet of rows; of kidney beans half a pint will do the same.

Turnips.—Half an ounce will sow a bed four feet and a half wide and twenty-four feet long.

Carrot.—An ounce will sow one hundred and fifty feet of drill row in a bed thirty feet long and four feet and a half wide.

Parsnip.—Half an ounce will sow a piece five feet wide and twenty feet long.

Spinach.—Two ounces will sow a bed four and a half feet wide and thirty feet long.

Beet and Mangold-Wurzel should be dibbled in two seeds in a hole an inch deep, the former nine inches apart, the latter a foot.

Onions.—An ounce of seed will sow a bed five feet wide and twenty-four feet long.

Leeks.—One ounce of seed will do for a bed eight feet long and four feet wide.

Lettuce.—A bed four feet wide and ten feet long will take a quarter of an ounce of seed.

THE POTATO must vary according to size, but averages from half to three-quarters of a ton to the acre.

Carrot.—The carrot-seed is prickly, and hangs together so, that it defies us to sow unless we first separate all the grains by rubbing in sand until we can sprinkle it freely.

TURNIPS, and SWEDES in particular, we prefer sowing in drills to broadcast, because the drills only make half the hoeing; for it has only to be done one way, the distance between the drills does the other.

BEANS.—In addition to the horse and broad beans, there is now a great call for the harricot or white large kidney bean. This ought to be sown in May, in drills eighteen inches to two feet apart. This kind is very prolific, and easily grown and harvested. They should not be thrashed out till wanted for market.

Mangold-Wurzel.—While this is growing, the large leaves which are fully matured should be pulled, and will be eaten greedily by all sorts of stock—pigs, sheep, horses, and cows; but those leaves only that are fully matured must be taken.

Potatoes.—All remedies, or rather pretended remedies, for curing or preventing the disease are fallacious. It attacks the crop under every possible circumstance, on high and low, wet and dry, light and heavy, poor and rich soils, and in every aspect. All we can do when it first makes its appearance is to cut the haulm down to the ground before the poison can descend. It stops the growth of the tubers, but does not prevent them from ripening.

Peas.—Many particular varieties of peas are sent to farmers and small holders to be grown for seed. In these cases the grower makes the most he can of the crop, which is paid for at the price agreed upon; but he must not grow any other pea, and he must send back the entire crop without reserve, be it little or much. They should be sown in drills, and the tall sorts require to be stuck. These sorts are generally grown in the neighbourhood of woods, or where sticks are cheap.

Flax and Hemp.—Of these crops we have treated fully, and they are likely to attract some attention, in consequence of the outcry for the material of which paper is made. If the rags which are made from them get scarce there will be a great demand for the waste, but as routine changes of crop they will always be advantageous.

Teazle.—The notice of this among the crops of a farm is not very common; but so desirable are changes, that it is difficult to suggest any marketable thing that comes amiss, and this crop will follow anything; but the small farmer is not obliged to grow it, although some may like it.

Wheat.—The chapters on this leading article in farming comprise all that need be known. Independently of ordinary corn crops, there are notices of Egyptian wheat and buck-wheat. The Egyptian wheat is like a bunch of ears, for smaller ones grow out from the base of the principal one, but the flour is said to be coarse. Buck-wheat will grow on any waste, but some should be grown, for it is excellent food for poultry.

RYE.—This is a most useful crop and by no means unprofitable; it is easily grown, will come well on poor lands, is excellent food for animals, cut green. In the neighbourhood of towns, the spring-cut brings a shilling a rod.

Barley is generally a profitable crop, and the spring-sown is not long on the ground; on this account it should not be neglected.

Oats will do well on light land in a wet season, and the straw is then fine and long; but oats like good land, and are all the better for liberal dressing.

Cobbett Corn will in some favourable seasons perfect itself in the open ground; and Mr. Cobbett used to boast of his crops when they succeeded; but he, like many others who had it almost before he was born, found that in short cold seasons it was an utter failure.

But since it was grown as a crop it has been regularly raised in heat, and when strong planted out like so many leeks. It should be planted two feet apart every way.

Some of our readers may, notwithstanding these directions, want advice on Farming or Gardening subjects. They have only to enclose a directed envelope, with their questions, to us at Dungannon House, Fulham, and they will be sure of the best answer we can give.

THE END.

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